INDIA RUBBER WORLD

Published on the 1st of each Month by

THE INDIA RUBBER PUBLISHING CO.

No. 15 West 38th Street, New York.

CABLE ADDRESS: IRWORLD, NEW YORK.

HENRY C. PEARSON, Editor

Vol. 47. MARCH 1, 1913. No. 6

SUBSCRIPTIONS: $3.00 per year, $1.75 for six months, postpaid, for the United States and dependencies and Mexico. To the Dominion of Canada and all other countries, $3.50 (or equivalent funds) per year, postpaid.

ADVERTISING: Rates will be made known on application.

REMITTANCES: Should always be made by bank or draft, Postoffice or Express money orders on New York, payable to THE INDIA RUBBER PUBLISHING COMPANY. Remittances for foreign subscriptions should be sent by International Postal Order, payable as above.

DISCONTINUANCES: Yearly orders for subscriptions and advertising are regarded as permanent, and after the first twelve months they will be discontinued only at the request of the subscriber or advertiser. Bills are rendered promptly at the beginning of each period, and thereby our patrons have due notice of continuance.

COPYRIGHT, 1913, BY THE INDIA RUBBER PUBLISHING CO.
Entered at the New York postoffice as mail matter of the second class.

TABLE OF CONTENTS ON LAST PAGE OF READING.

DR. HUBER ON THE RUBBER OUTLOOK IN BRAZIL.

IN the January issue of this publication there appeared a digest of the paper read by Dr. Jacques Huber, director of the government museum at Pará, on "The Present and Future of the Native Hevea Rubber Industry." In the same number there was an editorial referring to the importance and value of this contribution to the literature of an exceedingly interesting subject.

In this issue this paper will be found in full, and will undoubtedly be read attentively by everyone interested in the rubber industry. At the present rate of increase in the production of wild rubber in the Amazon basin, and in the output of the Eastern plantations, it is highly probable that the present year will see the plantation product overtake the volume of rubber shipped from Pará.

While there has been a material increase in the exports of rubber from Pará in the last fifteen years—an increase amounting very nearly to 100 per cent.—the increase during the last five years has been slight, while the increase in the plantation output has been constant and large. To go a little more into detail, the total shipments of rubber from Pará fifteen years ago were a little less than 22,000 tons. The volume rose steadily for four years until in 1901 it was 30,000 tons. It remained practically at this figure for four years, when in 1905 it began slowly to increase and grow steadily larger each year until it reached 39,000 tons in 1909. It then fell back in 1911 to less than 36,000 tons, or less than the output four years earlier. In 1912 it reached its highest point—43,000 tons.

But in the meantime Eastern plantation rubber has increased by leaps and bounds. In 1906 the Eastern plantation output amounted to 510 tons; the next year it nearly doubled, being 1,010 tons. In the following year it nearly doubled again, reaching the figure of 1,800 tons. The next year, 1909, it increased considerably over 100 per cent., amounting to 3,850 tons. In 1910 it showed another increase of over 100 per cent., reaching the substantial figure of 8,230 tons. In 1911 it was over 14,000 tons; and for 1912 the plantation output will doubtless prove to be over 28,000 tons. Careful estimates for the next few years, made by competent observers, place the product of the Eastern plantations at 40,000 tons for the present year, 55,000 tons for next year, and 70,000 tons for 1915.

The slow and by no means uniform increase in the Pará output during the last five years would seem to substantiate the contention made in many quarters that the production of South American wild rubber had about reached its maximum, while no one would care to hazard a conjecture as to when the output of plantation rubber will reach its limit. If the Amazon basin, therefore, is to compete in volume with the plantations of the East, it must do so from plantations of its own. Obviously it has the soil and the climate, as it is the native home of the *Hevea*. What it needs is capital, management and labor, chiefly the last. But if the Eastern planters have succeeded by carrying the trees to the place where there was labor in abundance, the South American planters will have to succeed by carrying labor to the place where nature has placed the trees.

THE LATEST REPORT FROM PUTUMAYO.

IN July and August of last year the whole English-speaking world was shocked by the astounding disclosures of the cruelties practised in the Putumayo district in the gathering of rubber in the concessions owned by the Peruvian-Amazon Co. For several weeks the press of England and America was full of the story of these atrocities. A summary of the situ-

ation was given in the editorial pages of our August issue, and may be remembered by some of our readers.

The first intimation of the situation in the Putumayo district (the Putumayo being one of the tributaries of the Upper Amazon, flowing through a section which at different times has been claimed by Colombia, Ecuador, Brazil and Peru, but of late years generally conceded as being under Peruvian sovereignty) came from two American engineers, who, after spending many months in that territory, went to London in 1909 with a story of what they had seen, that was so appalling that no publisher would accept it, and no daily paper print it—except in part. But what was printed aroused so much indignation in England that the British Consul at Rio de Janeiro, Sir Roger Casement, was despatched to the Putumayo territory to make an official investigation. The result of his investigation, extending over many months, was the substantial corroboration of all the allegations made by the two Americans, and it was the publication of Sir Roger Casement's report last Spring that inflamed the public—not only of England, but of America.

As a consequence of the popular indignation felt in this country that such conditions could exist in a government concerning which—under the theory of the Monroe Doctrine—we must necessarily feel some moral responsibility, our government felt called upon to take some action, and appointed Stuart J. Fuller consul at Iquitos, for the express purpose of having him visit the rubber country along the Putumayo and report his findings to the State Department.

Consul Fuller left Iquitos on the 7th of August, for his trip into the rubber jungle. He remained there a little over two months, and then sailed for home to submit his report. He reached New York on the 21st of December and immediately laid the results of his investigations before the State Department. On February 7, President Taft submitted the essential facts of this report, accompanied by a message of his own, to Congress; and on the same date the Peruvian Minister at Washington, Señor Pezet, handed to the State Department a communication from his government, giving many assurances that immediate reforms would be instituted, and that the atrocities that had given the name Putumayo the same evil prominence that was attached to the word Congo a few years ago, should immediately cease.

It cannot be said that Consul Fuller's report is altogether satisfactory, for he states that his work was carried on under extreme difficulties, as his movements were continually watched, and the result of his investigations, as far as possible, negatived by the agents of the Peruvian-Amazon Company, who constantly dogged his steps, making it difficult for him to get access to witnesses, and rendering it dangerous for the witnesses, even when secured, to give him the truth of the deplorable situation. But notwithstanding the fact that his movements were closely watched and constantly hampered, he learned enough to be able to corroborate practically all the statements made by Sir Roger Casement. Though conditions had apparently been somewhat ameliorated from what they were when at their worst, he found that the unoffending natives were still being flogged and otherwise maltreated and tortured in order to exact from them the maximum amount of effort. He found a system of peonage—under which the natives became the absolute slaves of the agents, being bought and sold as chattels—extremely prevalent.

The Peruvian minister in his communication declares the deep determination of his government to stop these barbarities, and cites as one reason "not alone because these events have occurred in our territory, but on account of the harm which they have done to Peru by giving us an undeserved notoriety for deep-rooted cruelty which is not a trait of our national character." Everyone will agree that it is most unfortunate that Peru should have gained "a notoriety for deep-rooted cruelty"; and it is quite likely that this is not a trait of their national character, but the fact remains that these frightful atrocities have been going on in Peru for over 15 years, and that no effort worthy of the name was ever made to stop these horrors, and to bring their perpetrators to justice, until, through American and English channels the dark secrets of the Putumayo had been told to the whole world, and could no longer be hidden.

The cries of the tortured natives fell on deaf ears at Lima. It was not until the voice of Christendom was raised in indignation and angry denunciation, that the home government began to show a genuine interest in the appalling crimes perpetrated within its borders.

A new administration has recently come into power in Peru, and its declaration of a determined purpose to wipe out the horrors of the Putumayo forests should be taken at their face value; but at the same time, in view of earlier protestations of a like sort that were never fulfilled, it behooves England and America—and especially America—not to relax their vigilant interest. Moreover, if any new investigators are sent into that

country, they should go unheralded and do their work without the constant escort and assistance of the criminals whose deeds are under inquiry. They should do their work unattended, unobserved and unhampered. Then the true conditions will be disclosed.

A MEMORIAL TO CHARLES GOODYEAR.

THOSE who were fortunate enough to be present at the banquet given at the Plaza, New York, last October, which concluded the International Rubber Exposition, as well as the members of the Rubber Club of America who attended the annual dinner held in January, will recall the eloquent addresses made on both of these occasions by Professor Franklin W. Hooper, of the Brooklyn Institute of Arts and Sciences, on the character and achievements of Charles Goodyear. In both of these admirable tributes the speaker urged the propriety of some adequate and suitable memorial to the man, whose life of heroic self-sacrifice had laid the foundations for the great rubber industry of today.

In his address before the Rubber Club, quoted in the February number of THE INDIA RUBBER WORLD, he said:

"In the City of Washington, as one of the group of buildings destined to become our great National Museum, most comprehensive in scope, most useful in purpose, most commanding in plan, will stand a museum in memory of Charles Goodyear; a museum in which may be placed, not only the history of the discovery and of the manifold inventions of Charles Goodyear, but in which may be exhibited all of the inventions, examples of manufactured products, illustrations of the many and great uses to which vulcanite has been put in these latter days. And in the grand vestibule of this Museum shall stand a statue of Charles Goodyear, the greatest American discoverer and inventor."

It is earnestly to be hoped that this vision may come true. Undoubtedly it will—in time. It can hardly be questioned that some day the Government will establish in connection with the Smithsonian Institution or otherwise, a great permanent national museum that shall adequately represent our national development in all the mechanical arts, and that the rubber industry will be allotted space in that great exposition commensurate with its importance. And such an exhibit of the rubber industry without a proper memorial to Charles Goodyear would be inconceivable. But in the meanwhile, and quite aside from what the Government in its own time may undertake, why should not the rubber men, through the club to which so large and representative a number of them belong, or through some other suitable agency, inaugurate a movement for some fitting and permanent memorial to the illustrious founder of this great industry.

The only public memorials to Goodyear in this country are two life-size bronze busts—one in the railroad station at Naugatuck, the scene of many of Goodyear's early struggles and of his first triumphs, and the other in the executive offices of the United States Rubber Co., the president of that company, Colonel Samuel P. Colt, being the donor of both of these memorials.

THOSE EUROPEAN MUD-GUARDS.

THERE appeared in the November issue of THE INDIA RUBBER WORLD an illustrated description of a mud-guard—or splash-guard—in use on some of the heavy automobile busses in the streets of Paris. In an account of the automobile show recently held in that city, from our special Paris correspondent, which appears on another page in this issue, quite a good deal of space is devoted to the rubber mud-guard. Our correspondent states that in some of the side streets of Paris it is not an infrequent occurrence for a pedestrian to be spattered with mud by one of the heavy motor-vehicles passing through the street, though he may be eighteen or twenty feet distant, and that the stores along these streets are frequently disfigured by the splashing of the mud. He believes that the mud-guard is so necessary that its use will soon be compulsory, and he predicts that the development of this new line of rubber manufacture will become quite important. Accounts appear quite frequently in European journals of competitive trials to test the merits of various mud-guards; the points chiefly taken into consideration being their efficiency, economy of construction and maintenance, and convenience in use and lightness.

All this indicates a condition in European cities with which we in this country, fortunately, are unfamiliar. We have heard a good deal about the superior roads in England and on the Continent, but the streets of their cities evidently still leave much to be desired. A mud-guard would be quite a curiosity to an American auto owner, and if the streets in our cities were so deep in mud that store-fronts and inoffensive pedestrians twenty feet away were be-spattered by passing vehicles, it would occur to us—not to put guards over the wheels—but to practise the recall on the street commissioner and get a new one.

In most lines of rubber manufacture we believe that we are fully abreast—if not a little ahead—of our friends

across the water, but in the development of mud-guards Europe is quite likely to retain the pre-eminence.

THE RIO EXPOSITION POSTPONED UNTIL SEPTEMBER.

THE January number of THE INDIA RUBBER WORLD contained a fairly extended editorial comment on the International Exposition to be held in Rio de Janeiro next May. The attention of the manufacturer was called to this opportunity—rendered particularly attractive by exemption from duties—to show the South Americans the product of his skill and enterprise. But great expositions to be successful, require much time for preparation, and the Rio management has concluded most wisely to postpone the opening from May until the early part of September. This is most fortunate for Americans who wish to be properly represented there, as it gives them ample time to prepare a creditable exhibit.

As already pointed out in these columns, the imports from Brazil into the United States amount to $124,000,000 a year in value, being one-third of all the Brazilian exports, while the Brazilian imports from the United States amount to only $25,000,000 a year, or one-eighth of the foreign goods bought by Brazilians. There certainly seems to be no good reason why when we buy over a third of their exports, they should buy seven-eighths of their imports from other markets. There certainly is a market for rubber goods in South America. The demand for tires in the large urban centers is already considerable, and undoubtedly a market for other lines of rubber goods could be secured if sufficient effort were put forth. Some English companies and at least one American manufacturing concern are seriously contemplating the erection of rubber factories in or near Rio de Janeiro. Such a move would be a distinct departure, and the result would be awaited with interest. But to make an attractive display at the Rio exposition would involve comparatively little expense and no risk, and is certainly worth the American manufacturers' most earnest consideration.

RUBBER TIPS TO SAVE THE EYES.

SOME of our progressive state legislatures have passed sundry enactments against the long, sharp and perilous hatpin, with which the feminine members of our body politic are accustomed to attach their headgear to the abundant locks with which they have been endowed by nature—or otherwise.

Any man who has occasion to use the subway, the elevated, or even the plain trolley during the going-to-work or going-home hours, appreciates the awful menace of this keen steel point projecting at random into space, and sweeping through the air with every movement of the owner's head. There was a time when in a crowded car, a man gave consideration to his watch and his pocketbook, but now if he is wise he watches only his eye.

In Sweden they have handled this world-wide evil with much acumen. They sometime since passed a law in that advanced country, making it a misdemeanor to wear hatpins with exposed points; and early last month a new law, corollary to the first, went into effect, providing that street car conductors throughout Sweden should be supplied by the Government with rubber tips which they should furnish, at one cent each, to women passengers with unprotected hatpin points.

Now here is a vital issue for the new administration. If Mr. Wilson in his impending inaugural, will forego all references to sacred honor, plighted faith and high resolve, and simply announce that the first work of the new Congress will be to pass a law compelling the use of rubber tips on all hatpins, he will achieve what the historical writers love to refer to as a *coup d'etat*, and will instantly take his place in masculine regard by the side of Washington—if not a little in front.

But let us view this matter not with reference to its political effect, but rather as to its bearing on the great world of rubber manufacture. What a fine new industry it would open up. Just consider the statistics for a moment: There are 45,000,000 female persons in the United States, 40,000,000 of them being of the hatpin age, viz., between 8 and 80. It is safe to say that each bonnet contains five hatpins. (There are men who aver the number is fifty, but this is undoubtedly an exaggeration.) Each bonnet wearer would doubtless consume—counting the lost, loaned and those given to the baby to play with—three full sets, or fifteen rubber tips a year. That would make an annual consumption of 600,000,000 rubber tips. Assuming that these rubber tips retail here as in Sweden, at one cent each, making annual gross sales of $6,000,000, and that the manufacturer modestly contents himself with 50 per cent. of the gross—that would amount to $3,000,000, quite a snug, little business. Now who will see that the Swedish law is adopted in the United States, and who will be the first to equip his factory for the output of 600,000,000 point-covering, eye-saving rubber tips?

COMPARATIVE IMPORTS AND PRICES OF RUBBER.

STATISTICS to end of November (the latest published at time of writing) give the following details of rubber imports for first eleven months of the last three years:

Year.	Pounds.	Value.	Average Per Pound.
1910.....	83,888,801	$91,038,750	$1.08
1911.....	74,013,921	67,179,799	0.91
1912.....	107,078,574	90,436,489	0.85

As these returns are based on the imports of various descriptions of rubber, their value is only of general character. However, they establish the broad fact, that an increase of nearly 50 per cent. in the quantity imported in 1912 as compared with 1911, only led to an average fall in price of less than 7 per cent.

The Present and Future of the Native "Hevea" Rubber Industry.

By Jacques Huber, Ph. D., Director of the Museu Goeldi, Pará.

PAPER READ AT THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK, 1912.

THE opinion is common among persons interested in plantation companies, that native Brazilian rubber will be entirely knocked out by the product of the eastern plantations within the next ten years, when the output of these will be over 100,000 tons.

Regarding those opinions, it is evident that "the wish is father of the thought." Most of these prophets hope that the disappearing of the Brazilian crop from the market will relieve the plantations from the danger of over-production. Others perhaps are instinctive enemies of Brazilian rubber because of the manner in which Brazil has protected its coffee output.

If we consider the problem from a higher and more objective point of view than that of the plantation shareholder, if for instance, we consider the views of the manufacturing industry, we find that there is no necessity for the disappearance or reduction of the Brazilian crop; on the contrary, there will be an increased need for the Amazonian grade, and especially for the Hard-Cure Pará rubber.

DR. JACQUES HUBER.

Of course, the wonderful development of the whole rubber industry would have been seriously checked had it not been for that very necessary asset. The plantations and their rapidly increasing production will enable the manufacturing industry to develop without fear of shortage. The opportunities for the manufacturing industry are increased by the low cost of the plantation rubber, which can be sold at much lower prices than those prevailing for Pará. There is, further, no doubt that in their downward movement, the prices of plantation rubber are bound to affect, to a greater or less extent, even the quotations for the highest grade of rubber—the upper Amazonian Hard-Cure, the prices of which (without the prodigious development of the plantations and the improvement of their product) would, of course, have steadily and considerably increased.

The Brazilian producing centres appreciate the changed position of the rubber market, and instead of trying in vain to force the prices to a higher level, they are now preparing themselves to improve the position of the article by lowering the cost of production. This, of course, involves some sacrifice, but as the life of a whole country depends on it, the sacrifice will be made without muttering.

It is now generally conceded in Brazil, that that country cannot monopolize the rubber production of the world, and that we have to reckon with the fact that within a few years the Eastern plantations may produce more good quality low-priced *Hevea* rubber than Brazil.

At the same time the people interested in rubber plantations will probably realize the fact that the Amazonian rubber, although at the present time more expensive to produce than the plantation grades, will hold its position, thanks to its superior qualities and thanks to the efforts which are being made to improve the conditions of the industry.

Perhaps the following statements will help to give an idea of the true position of wild rubber in comparison with its younger brother, the plantation rubber, and may contribute to strengthen the conviction above expressed, which, I believe, is shared by all who understand this very complicated problem.

SUPERIOR QUALITY OF AMAZONIAN RUBBER.

In spite of all the drawbacks of the native rubber industry on the Amazon, there is, fortunately, one great advantage—the *superior quality of the Amazonian product.* This remark has reference only to smoked rubber, and more especially hard-cure smoked Pará, the superior elasticity and strength of which (over the other grades, and principally over the plantation rubber) has been proved by the daily experience of the manufacturers, and by many scientific experiments.

It is hoped that we will before long have a complete comparison of the Pará Hard-Cure with plantation *Hevea,* as carried out according to the program of the Rubber Testing Committee.

For the moment I think that it is not yet possible to give definite figures, but I wish to call your attention to some points which seem to me to be even of more importance than the usual figures about tensile strength. I refer to the behavior with regard to the exterior influences—light and temperature—which together determine more or less the "keeping quality." The stock of rubber held by the Pará Syndicate is one very instructive example of the good keeping qualities of the smoked Pará rubber. After two years of keeping in more or less overheated stores, this rubber has only improved in quality. There are other more striking cases of the resistance of smoked rubber, which have always astonished me, when I heard on the other side, of the precautions which are necessary to preserve the plantation rubber from being injured by light or heat. Smoked rubber balls can be left for months in the sun without being spoiled, and this happens for instance in Bolivian *seringaes.*

Perhaps the keeping qualities of the raw rubber are not as important as those of vulcanized rubber, but it is probable that the raw rubber which better resists the action of sunlight and high temperatures, will continue to resist these influences when vulcanized. That is only a suggestion which I desire to bring to the attention of this conference.

One of the principal arguments of those who predict the disappearance of native *Hevea* rubber from the market, is the difficulty of exploiting scattered forest trees in comparison with the very easy exploitation of modern plantations. There is in fact a big difference in favor of the plantations, but it is compensated to a certain extent by the size and age of the native trees. It is worth considering that, in the Amazonian rubber forests a worker not only collects, but prepares by the tiresome smoking process from three to five or even ten kilograms of rubber, instead of the one or two kilograms furnished by one

tapper in the planting districts of the East. (One kilogram = 2.2 pounds.) The principal cause of this difference is of course the age of the trees. There is no doubt that full grown trees can be more economically tapped than young trees.

Of course the eastern planters have succeeded in making the best of their young trees and in obtaining from 4 to 6-year-old trees, crops never thought of in former years; but if they continue in the same way, many of them probably will never have old trees in full bearing.

Even the scattered location of the native trees has some advantages, as it guarantees a longer existence and protection against the spread of fungus diseases. It may, however, in many cases, be advantageous to augment the actual number of wild trees by interplanting.

Another argument of those who oppose native *Hevea* rubber is the exhaustion of some rubber districts on the Amazon. For *Castilloa*, this argument has of course some weight, as the trees are cut down for the extraction of latex. Even in this case, it must be remembered that only the biggest trees (more than 15 inches in diameter) are exploited, and after a number of years there are other full grown trees to take their place.

For the *Hevea* trees extinction cannot be thought of, as even the most roughly treated specimens resist rough treatment for many years, and there is always a free supply of young trees. It is true that in some districts, where the exploitation has continued since the middle of the last century—as for instance in the Cametá district—the full-grown trees are badly injured, so that their yield has been considerably reduced. As a rule the trees are allowed to rest if they show any sign of exhaustion. Owing to this precaution and to the scarcity of labor, perhaps only half of the known *estradas* are actually exploited.

LABOR.

This scarcity of labor has always been one of the drawbacks in the development of the Amazon region. Native free labor is available in agricultural districts about Belem (Pará) and along Bragança railroad, and on the lower Amazon (Santareus and Obidos); but it is not abundant, and is at least six times as expensive as the average coolie labor on the Eastern plantation. The labor force in the *seringaes* consists mainly of native inhabitants of the northern provinces of Brazil. They are not working for a fixed wage, and the special arrangements they have with the owner of the *seringal* give them apparently a much more considerable share of the profit on the rubber than they would realize as simple agricultural workmen. That is the reason why the *seringaes* have such a fascination for even the settled agricultural population, which is periodically drained of young men, when there is any rise in the price of rubber.

But the financial superiority of a rubber gatherer over an agricultural worker is often illusory, as the "patrão" takes back in exaggerated prices (for the articles of first necessity) the money he has paid the laborer. In all cases, however, the labor is expensive on the Amazon, and though it is much more efficient than the coolie labor, as regards the amount and value of rubber produced, this compensation is generally not sufficient to bring the cost of production to the same figure as in the Eastern plantations. Where communication is easy and the freight charges are low, the trees are generally more or less spoiled, and give less than the average; and in the districts where the trees give good yields, the freight is far higher.

Sometimes irregularity of supply is charged against native rubber. This of course is not so much the fault of the wicked *seringueiros*, who are sometimes accused of retaining their product for speculative purposes. It is rather attributable to the conditions of navigation on the remotest affluents of the Amazon. Speculating is of course always done to a certain extent by *seringueiros*, *aviadores* and export firms; and we have seen some attempts of this kind in late years, but the meteorologic and hydrographic conditions of the country are chiefly responsible for the irregularity of the supply.

It is not probable that the distribution of the working periods can be altered, as these depend entirely upon the weather conditions. For the regulation of the transportation of the rubber from the remotest districts, the Brazilian Federal Government has taken important steps, so that it is hoped that in the future the supplies can be better distributed over the whole year.

Those who predict the ruin of the Amazonian rubber industry point to the fact that in the last years the output of rubber from that region has been almost stationary, in spite of the generally favorable conditions of the market and the "corner" in 1910. This is generally attributed to the exhaustion of the yielding power of the rubber trees in the more accessible districts and to the difficulty of working the more remote districts. This of course is right to a certain extent, but there are many other reasons for the arrested development of the rubber industry on the Amazon.

In the first line, there is the deficient organization of the whole industry, especially its financial side, which is so bad as to make the careless distribution of money frequently possible.

Unfortunately only a small part of the money earned in rubber production has been applied in improvements in the *seringal*, and in the general conditions of the rubber districts. Had there been a sound policy in this respect, the Amazon would have made very much greater progress.

It is only in recent years that the Government and the leading men in the trade have awakened to the fact that without the introduction of a rational scheme of improvements and reforms in the rubber districts; and without a thorough reform of the whole organization of the industry, it will be impossible for the Amazonian trade to meet the competition of the Eastern plantations.

Considering the immense extent of the territory, the scarcity of population and the complexity of problems, the task of such a reorganization is a gigantic one, and it is certainly excusable, if in the proposed plans there are some points open to discussion.

Within the scope of this address it is not possible, of course, to cover the whole scheme of reforms planned by the Federal and the State Governments, but I shall ask your permission to present here some points, which seem to me of particular interest.

PROPOSED REFORMS.

As to the improvement of the means of communication there would be much to say. The first thing to do is to improve and cheapen river navigation, by which most of the actual producing centers are reached. Railroads are indispensable along the course of the rivers which are obstructed by rapids. How much an improvement in the means of communications is needed, is shown by the fact that the *seringueiros* of certain remote districts are sometimes exposed to actual starvation, because of the holding up of the steamers by bad conditions of navigability.

Better food supply will come with cheaper and quicker communication. There are always several agricultural centers, especially in the State of Pará, from which the food could be sent to the rubber producing centers.

In the scheme of reforms planned by the Federal Government the upper Rio Branco region, with its extensive *campos* for cattle breeding, is considered as the principal food-supply center for the rubber districts of the Upper Amazon. Food production within the limits of these districts will always be small, because of the attractions which the free life of the *seringueiros* always has for the other working classes.

Sanitation is of course closely connected with good food supply. *It is perhaps the most important problem in the Amazonian region.* The successful extinction of yellow fever in the State of Pará is a very important step in that direction, especially as it proves that the Brazilian Government has at its command good men to carry out the much more difficult problems of sanitation in the interior.

Of course, all these measures will augment the output of rubber, as the proportion of the sick will be reduced, and the work-

ing power of the healthy strengthened. Then again, the rubber districts will be more attractive to immigrants and will encourage the settlement of a permanent population. For the producing capacity of the country, these improvements are probably of more importance than any other, as they bear on a factor keenly appreciated in Amazonia—the human element.

That does not mean that there will not be other reforms regarding the conditions of work in the rubber forests.

First of all, I have always advocated the special protection of young *Hevea* trees in the rubber forests, and even interplanting in cases where this is possible. More than 10 trees per hectare (1 hectare = 2½ acres) are seldom met with in the natural rubber forests, and even if we do not intend to have a pure rubber plantation, it should be possible to obtain in favorable situations at least 20 trees per hectare by protecting the young trees and replacing only occasionally some of the other forest trees by *Hevea* trees.

I am sure that the methods of tapping used in the East could be applied to the old forest trees, thus increasing their yield, and the whole output of the rubber forest would be much larger, perhaps double the present amount.

There are, however, two principal reasons which have until now, prevented the introduction of these methods in native *seringaes*. First: most of the trees are already deformed by the old systems of tapping with the *machadinha*, so that it would be impossible to work them with the tapping knives without giving them first a rest of several years. Second: it would be difficult to train the *seringueiros* for systematic tapping according to the methods used in the East.

There are other reasons, for example, the moisture content of the bark in these forests, which would probably prevent the latex from flowing straight down to the cup. In spite of these circumstances, I thought it advisable to encourage some experiments of tapping forest trees, according to the best methods used in the East.

As is now generally admitted, the superiority of the Amazonian *Hevea* rubber is due principally to the smoking process. It would not therefore be prudent to introduce any other method of preparing the rubber, without having positive proofs of its superiority over the smoking process. In Europe it is known that a considerable part of the Amazonian *Hevea* rubber is produced in the form of scrap, and "Sernamby de Cameta!" Of course it would be better to produce this part also in high-grade quality, but that would not be possible even with the greatest care, as part of the latex always coagulates on the bark of the trees and on; or in, the collecting tins. The idea of turning out only one standard grade of Amazonian *Hevea* rubber, is therefore not feasible. It is, of course, possible to work the scrap into crepe, as is usual in the Eastern plantations, but then we should always have two grades. If the Cerqueira Pinto process—proving superior to the smoking process—should be carried out more commonly, it would allow us to reduce the scrap considerably; and as it permits the coagulation of watery latex, it would avoid the loss of considerable quantities of latex, which in rainy weather are actually not worked out either in form of smoked rubber or in form of scrap; but simply thrown away.

PLANTATIONS ON THE AMAZON?

Is it possible to start plantations successfully on the Amazon? This is a very important question, not only for the inhabitants of that region, but also, I think, for the whole rubber industry. As I have always advocated plantations on the Amazon, I have naturally followed with great interest the planting movement in Brazil, which some years ago—owing to the news of the splendid success of the eastern plantations, and thanks to official protection—has set in with renewed energy.

Of older plantations there are only a few, at least in the State of Pará, and these have as a rule not been very successful. Some private plantations may have given better results, but we have no records as to their production. On the other hand the new plantations, started under the protective State Laws, are now too young to permit a prophecy as to their future.

After the enactment of the State laws providing many advantages to the rubber growers, there was a rush in obtaining these advantages, especially the premium in cash. The registration at the Agricultural Department has reached in two years over eight million *Hevea* trees, to be planted in the next four years. Of these, 340,000 were reported as planted at the end of 1911. Most of the registrants are private planters, but the bulk of the proposed planting will be done by companies, one of which, on the river *Mojn*, is operating with American capital.

Comparing our conditions with those prevailing in the East, our chief advantage is that of cheap land, against which must be entered the very serious disadvantages of expensive labor and high export duties. It is true that the new laws reduce the duty to a considerable extent for rubber produced on plantations. There are other advantages, which have more bearing on lowering the cost of the first establishment of the plantations than of their production later.

Taken as a whole, planting on a large scale, by companies with foreign capital, is not at all out of the question in the Amazon region. Since I visited the Eastern plantations, I am, however, inclined to think that to operate our plantations in exactly the same way, as, for instance, in Malaya, is neither possible nor would it be advisable. This is impossible with the Brazilian worker, who is at least three times more expensive, even taking into consideration his higher working power. He is much more independent than the Indian coolie and imported coolies are undesirable in most cases.

I think that by introducing contract work to a great extent, some big plantations could be established in places where frequent supervision as well as free supply of labor and food can be assured. The neighborhood of Belem or the lower course of the Amazon offers these conditions. Of course, there will be some danger of frequent changes in the labor force, but the best elements, if well treated and reasonably paid, will stay and form a nucleus of skilled workmen able to introduce the new comers into the work.

In a general way, however, I am of the opinion that the rubber planting on the Amazon has to be carried out either by the actual occupants of the country or by companies with very large funds, which can combine the planting with an efficient scheme of colonization.

In any case—and this can not be sufficiently insisted upon—the first work of every planting company should always be the sanitation of the place and the creation of an attractive *milieu* for the workmen, either by giving them the opportunity of settling under favorable conditions, with their wives and children, or offering them good housing and good fresh food at a reasonable price, if they are to be employed only for a limited time.

I have always had a strong belief in the necessity and usefulness of rubber planting done by the native and settled population. If every owner of a small *seringal* would only plant a thousand rubber trees, there would be in ten years a very sensible increase of the output. It is true that planting in this line is now generally done in a very deficient manner, and it will require a serious campaign of agricultural education to improve the condition of these small plantations. Above all, these plantations should be operated upon good principles of selection. Then they should afford an opportunity for experiment and demonstration of the best tapping methods applicable to the proper *seringaes*. Finally, they should show the way to the best method of improving rubber forests by interplanting.

There is no doubt that the big plantations will have some influence upon the methods used in the native rubber forests, and the reverse is likewise true. It would seem strange that in the Amazon region, the very home of the *Hevea Brasiliensis*, its cultivation has not made more progress, in spite of the many efforts in that direction. The cause is not only in the general

conditions of the country, and in the scarcity of labor, but perhaps principally in a factor which unfortunately has too often been overlooked—that of management. In the East the rubber plantations were nearly all started by men of experience in the management of tea, coffee or other big estates. In Amazonia there are practically no plantations on a large scale and trained plantation managers are seldom to be found there. They have, therefore, to be contracted for, from Southern Brazil or from the Eastern plantations. They should be familiar not only with rubber planting, but should be able to adapt themselves to changed conditions of life and work.

In conclusion, we must admit that the evolution of rubber planting on the Amazon will probably be something quite different from what was witnessed in the Eastern plantations. There is no doubt, that during the immediate future the East will continue to lead in planting enterprises. On the Amazon the plantations will be established more slowly, but they will be of great importance as the necessary complement of the native rubber extraction.

The old method will be helped and develop from a crude empirical process to a scientifically established and more economically operated industry.

ENGLISH VIEWS ON RUBBER SITUATION.

DIFFERING to some extent in details, the annual reports of the leading English rubber authorities show an increase in the past and estimate a still further augmentation in the production for 1913.

One of the most complete presentations of the statistical position is that published by Messrs. J. A. Henderson & Co., Ltd., of London, including figures of actual production for 1911 and 1912, together with estimates for 1913. The table is subjoined:—

RUBBER SUPPLY AND CONSUMPTION ESTIMATES.

ESTIMATED WORLD'S SUPPLY (TONS).

	1911.	1912.	1913.
Amazonas and Brazils	39,000	40,500	40,000
West African	15,000	13,800	13,800
East African, etc.	5,300	4,000	4,000
Central American, etc.	2,500	2,500	2,500
Plantation	14,200	28,500	38,000
	76,000	89,300	98,300
Guayule	9,200	7,000	7,000
Malaysian, etc.	2,800	2,700	2,700
Totals	88,000	99,000	108,000

ESTIMATED CONSUMPTION (TONS).

	1911.	1912.	1913.
England	12,000	14,500	17,520
Germany, Austria, etc.	14,000	16,000	18,286
France	8,000	9,500	11,281
Russia	8,500	9,000	9,529
Italy, etc.	2,000	1,500	1,125
Japan and Australia	1,500	1,000	667
America and Canada	42,000	47,500	53,720
Totals	88,000	99,000	112,128

These figures indicate an augmentation of the supply by 9,000 tons for the present year. Leaving out of consideration the minor variations in receipts from other quarters, this result practically represents the increase in the estimated supply of plantation rubber from 28,500 to 38,000 tons. Mr. Lampard (prominent as a director of various planting companies), had named 40,000 tons as a probability. An estimate of an average of 3,000 tons a month of plantation rubber for 1913 seems generally accepted.

In their annual review, Messrs. S. Figgis & Co. comment on the freedom with which Brazil continues to supply the markets of the world, quoting the following shipments for the last four years: 1909, 42,000 tons; 1910, 40,500 tons; 1911, 39,500 tons; 1912, 40,500 tons. The improvement which has taken place in the preparation of rubber by Eastern planters, has proved of mutual benefit; having stimulated the forward order business. Further progress is urged in this direction, in conjunction with a renewal of the previous suggestions to standardize qualities into: No. 1 Latex pale; No. 2, clean light brown and grey, and No. 3 (from bark), dark and brown.

Messrs. Figgis estimate 950,000 acres as being the area under rubber cultivation in the East, and place the number of trees at probably 110 millions, of which only a moderate proportion have been tapped.

Messrs. Gow, Wilson & Stanton in their report for the year 1912 point out an interesting fact. Six years ago the production of rubber from the whole of the East was about one thousand tons; the price then realized averaging 4/9⅝ per pound. In 1912 the total product has exceeded 28,000 tons, while the price obtained at the London auctions averaged 4/7½, being only a slight reduction on the figure realized for the smaller quantity at an earlier date. The consuming power of the industry is thus clearly demonstrated. At the same time the development of the trade has shown that the physical properties of the best prepared samples of plantation rubber are fully equal to those of any other description. A large proportion of the whole crop is shipped in the form of crepe. The premium lately ruling on smoked sheet will probably stimulate its production, with the possible ultimate result of the premium not being maintained.

AS TO DIRECT SHIPMENTS FROM THE EAST.

IN the December issue of THE INDIA RUBBER WORLD there was an editorial advocating the shipment of rubber direct from the Eastern plantations to New York, instead of having it shipped, as at present, from the East to some Continental or English port, to be re-shipped to New York later. This article has elicited the following letter from the well-known firm of John Lang, Ltd., of London.

To the Editor, INDIA RUBBER WORLD—

Dear Sir: Referring to your very interesting article on the "Shipping of Rubber Direct to New York," we should like to state that, although this would be very desirable from a manufacturer's point of view, we fear that it will never assume large proportions, as it is, of course, common knowledge that the bulk of the plantation rubber sold either privately or in the auction here is graded by the buyers, each of whom have their own standard types by which they sell to the trade, and consequently the original parcels are sorted and divided into these various standards before they are sent to the manufacturers.

There is, of course, a certain reason, and sometimes a necessity, to deal with certain packages in this way, but the necessity is not unavoidable.

We have for years acted as buyers for manufacturers here and on the Continent, and always forward the original packages with the original marks as received from the East, so that the identity of the rubber is never lost or tampered with. We find it necessary only to see that the packages are put in good repair for shipment, and our experience always has been that the manufacturers appreciate the original packages, and we have never had any complaints either as to the quality of the rubber or the condition of the packages on arrival at their destination.

We should be pleased to hear from any firms desirous of buying on this market with the understanding that they buy and receive only first hand rubber in the original packages.

Yours faithfully,

JOHN LANG, LTD.
J. R. BRIGGS, Director.

Laboratory Organization in the Rubber Industry.

By Frederic Dannerth, Ph. D., Consulting Industrial Chemist.

PAPER READ AT THE INTERNATIONAL RUBBER CONFERENCE, HELD AT GRAND CENTRAL PALACE, NEW YORK, SEPTEMBER 23 TO OCTOBER 3, 1912.

THERE are certain persons to whom a manufacturer should tell the whole miserable truth of his failures—his lawyer, his chemist and himself. Above all, he should be absolutely frank with himself. After he has congratulated himself upon the perfect manner in which his goods are being bought and his factory is being managed, he should stop for a moment for a close scrutiny of his plant.

The Consulting Chemist would very often like to question

DR. FREDERIC DANNERTH.

the manufacturer on this point, but he is prevented from doing so for obvious reasons.

Successful corporations of today have either a written or verbal arrangement with the managing directors, which is in effect:

1. To purchase the best raw materials for a given purpose at the lowest possible market price.

2. To criticize the manner in which the factory manager is making up these raw materials into saleable goods, and help him to attain perfection.

3. To help the salesman, when it is found that competitors are offering better quality for the same or for less money.

4. To deliver to the factory manager, heat, light and power at the lowest possible cost.

One corporation president who had risen to a realization of the importance of chemical consultation, recently opened a conversation thus:

"Our competitors have us skinned to death on water-tank packing; we have been put out of the race with our air-brake hose; our railroad steam-hose has rotted away in actual use. Do not waste any time on theoretical considerations and research work, but go right ahead and give us these three things. What we want is results, and you will have to earn your fee every day, for we cannot afford to gamble away one hundred dollars without getting the results we want."

As a matter of record it might be added that that particular man is still wanting those results. He has failed to realize that the science of Applied Chemistry was not created in an off hour, but is the product of many years of arduous labor and thought. From the day when "the compound man" was the chief chemist of the works, we have come to a point in the development of factory management where all chemical problems should first be presented to the Supervising Chemist, an official who occupies a position parallel with the Factory Manager and the Operating Engineer. In some cases he is permanently employed by the organization, while in other cases he devotes only a portion of his time to his duties at one particular factory.

The constant growth in efficiency of the rubber industry is largely the result of organization that insures the orderly use of every talent required. Occupying a very important place in such organization is the fullest use of a laboratory staff with trained chemists. It is the duty of this department to:

1. Investigate all new processes.
2. Constantly improve existing ones.
3. Correct and explain irregularities of current operations.
4. Invent new and useful processes.
5. Determine the value and exact composition of all raw materials.
6. Determine the value and composition of competitors' products.
7. Advise correctly on "specification goods."
8. Control different stages of many processes.

Hence if these constructive forces are to be used to the fullest, it must be through the creation of an organization that will cause every department in that organization to cooperate with the laboratory. To accomplish this I present for your consideration methods which are the result of careful study for many years in some of the largest manufacturing plants in America.

The Supervising Chemist is valuable to the firm in proportion to his perspective, his ability to see from afar the possibilities of some new proposition, whether it be a problem in purchasing, manufacturing or selling. Directly under him he has a corps of five first assistants who are in some cases designated as chief chemists. They are: The Engineering chemist, the Buyers' chemist, the Factory chemist, the Sales chemist, and the Research chemist.

The organization of the Laboratory Department includes:

1. Systematic abstracting of the important foreign and domestic journals and of the patents of the principal countries.

2. Forwarding copies of these abstracts weekly to all who can use them, with instructions to study them carefully and advise the Laboratory immediately of those which might be of value.

3. Thorough abstracting of the literature, in the case of new work, thus presenting all that has been published relating to the subject. Repetition of the work of others is thus saved, valuable suggestions are received and new lines of thought are opened.

4. A pamphlet library containing catalogs of machinery, structural material, scientific apparatus, etc., is kept up to date by correspondence with the manufacturers of these materials. This collection can be made far more valuable than regularly published books upon identical subjects.

5. All translating, abstracting and indexing should be in charge of one competent man, with assistants, if needed.

6. Superintendents should present to the supervising chemist, monthly reports embodying all ideas of their own, or their assistants, that might in any way warrant investigation. Through such a system thoroughly carried out, valuable suggestions can be obtained that might otherwise be lost. This plan will also stimulate closer thought and observation concerning all the details of manufacturing.

7. There should be (through proper connections) systematic prompt advices of all improvements in European practice that would be of value to the corporation.

8. The Laboratory should place at the disposal of the sales department, whenever this is necessary to demonstrate the value or quality of the company's products—a competent testing engineer, who can instruct the customer in the standard methods of conducting physical tests of manufactured rubber goods.

THE ENGINEERING CHEMIST receives instructions from the Operating Engineer (through the supervising chemist). His first and most important field of activity is the examination of materials used by the power plant. This includes:

1. Periodic analysis of the coal supply.
2. The control of combustion by flue-gas analysis.
3. The examination of lubricants.
4. The examination of the water used for boilers.
5. The examination of boiler deposits and boiler compounds.
6. Practical tests on the quality of paints and varnishes used in the works.

As a result of his contact with the power plant, the engineering chemist is in a position to provide the factory chemist with exact data on the wearing qualities of rubber goods used in the power plant. Such materials include steam-packing, transmission-belting, water-hose, conveyor-belting and washers of all sorts. He also keeps his eye on the various structural materials, metals and lumber brought into the factory, in which case he co-operates with the buyer's chemist.

THE BUYER'S CHEMIST receives instructions from the purchasing agent (through the supervising chemist). He is essentially an analyst, for he must determine the purity and the comparative commercial value of mineral drugs, organic fillers, reclaimed rubber, crude gum, textiles (sheeting, duck and yarn), and the various metals—which have been offered to the purchasing department. He must control all work relating to sampling and analysis, because so much depends upon prompt and accurate results. He must be able to devise special methods, and should endeavor to make his methods conform to those of the vendor so far as this is consistent with good work. He must record all physical tests made on rubber and textiles, and enter these with the chemical tests in a special folio kept for this purpose.

He devises for the purchasing departments, rational specifications, so that it will be possible for the buyer to procure bids on a standard material which the vendors will be able to supply, without an abnormal rise in price for the commodity.

THE FACTORY CHEMIST receives instructions from the factory manager (through the supervising chemist). He investigates problems which arise in the factory and endeavors, by simplifying operations, to reduce the cost of production. This may be attained by increasing the speed of machinery; by omitting unnecessary operations; or by eliminating waste. Before arriving at final conclusions regarding recipes for new compounds, he will, of course, have to make such examinations as "friction tests" on belting and hose; pressure tests on fire-hose; steaming tests on steam-hose and so forth.

Other problems which he must face from time to time are: the reclaiming of waste rubber; the correction of defective cures on molded goods and steam-cured articles; defective frictions on cotton-jacketed hose.

In addition to the actual manufacturing operations, he must follow up for the factory manager, the preparatory processes of washing and drying the crude gum; compounding, mixing and calendering the stock. In his record book he enters all improvements made in any of these departments and devotes a separate page to each department. By thus entering the date on which the improvement or new method was installed, he will be in a position to give the factory manager complete data on the advantages gained by the step. He also makes such analyses as are necessary in the intermediate steps of some processes in order to insure proper control and a uniform product.

The "premature hardening" of steam-packing; the "bootlegging" of belts; the "blooming" of hose; the "loose sleeve" effect on rubber covered rolls; the "dead-friction" effect on cotton-jacketed hose; the "uncurable" stamp gum; the abnormal "swelling" of extract-tank packing—these are but a few of the innumerable defects which must from time to time be investigated by the factory chemist.

Another field of activity is the writing of recipes to meet certain specifications. The various government departments, municipalities and railroad companies have at present sharply defined specifications for the delivery of manufactured rubber goods, so that it has become necessary for contractors to exercise considerable caution in the making up of these goods. In such matters the factory chemist as a rule works in conjunction with the foreman of the compounding room.

THE SALES CHEMIST receives instructions from the sales manager (through the supervising chemist). To him are brought commercial rubber products put on the market by competing firms. His duty is to pick apart these products and determine the manner in which they were constructed, so that the desirable features of the sample can be duplicated if need be. He makes chemical analyses of these samples and carries out physical tests to determine in the laboratory their approximate value compared with similar products turned out by his employers. Thus he determines as far as possible the character of the textiles used and the particular fiber employed (whether it be cotton, flax, hemp, or ramie). He determines the "friction" value on belting and hose; the strength and stretch value of the rubber lining in articles like fire-hose; he also determines the tensile strength and other physical properties of such products as steam packings.

If the competitor's article is of inferior quality and is sold at a lower figure than the article made by his firm, he must give the sales manager information which will enable him to present these facts to the customer. The sales manager occasionally has turned back to him specimens of conveyor belting or transmission belting which have not stood the test of time. In such cases it is for the sales chemist to ascertain the exact conditions under which the belt has operated, so that he can determine whether or not the usage has been unexpectedly rough.

The Sales Chemist conducts the final physical and chemical tests on specification goods and places his "O. K." on all such orders before they are shipped.

THE RESEARCH CHEMIST receives instructions direct from the supervising chemist. The raw material for his researches is obtained to a considerable extent from his colleagues in addition to the problems which are mapped out for him by his superior. He should have at his disposal a well arranged and adequately equipped index to periodical literature and the patent literature of all countries. It is from these sources that many valuable suggestions are obtained, and it should not be forgotten that many very important suggestions for development work are obtained from sources entirely outside

the rubber industry. Thus it sometimes happens that a chemical process which has been used in the leather industry, in the varnish industry, or even in some inorganic industry, has called forth in the mind of the chemist possibilities which would not appear at first thought. As the special chemist in charge of development work, he should be informed as to the latest advances in the way of machinery for all operations which involve chemical processes. Materials of construction for vulcanizing and relaiming apparatus should also be given due attention by him. His duties comprise:

1. Investigation of cheaper raw materials.
2. Creation of new uses for products manufactured.
3. Examination of new products to determine their present and future value.
4. Promotion of increased efficiency.
5. Improvement of the quality of products manufactured.
6. Utilization of wastes.
7. Procuring more efficient structural material for apparatus.

Great care should be exercised in the selection of the Research Chemist as he should embody all the varied talent and knowledge required in a wide field; and it is important here that only the very fit be retained, as the achievements of this department will very largely depend on two factors: (1) a highly efficient college-trained staff; (2) an organization that will, from every other department, invite periodic presentation of all questions worthy of research.

The collective talent of the research chemists should embrace:

1. Thorough scientific education in the principles of physics and chemistry.
2. The power to imagine new processes.
3. The power to discern the causes of various irregularities in manufacture.
4. The ability to submit these ideas to the test of experimental proof.
5. The habit of accurate observation.
6. The skill to deduce from such observation the correct conclusion.
7. The quality of discerning the one vital thing that counts amidst the maze of unessential generalities.
8. A knowledge of manufacturing that will make all conform to practical conditions.

"All these qualities, diligently applied," says Mr. William Ferguson in a recent communication, "are essential to the success of modern research."

The Research Chemist should have at his disposal, a properly equipped research laboratory, with miniature mixing-mills, calenders, presses and vulcanizers, where work can be carried on in a test tube or on a manufacturing scale as occasion requires, in order to determine practical difficulties and costs. Together with the supervising chemist and the factory manager he forms the Research Committee which meets regularly to consider and advise upon all important investigations.

Questions presented to this department are settled: (1) by carrying out the experimental work upon a small scale; (2) abstracting the journal and patent literature bearing upon it; (3) increasing in size the experiments, as occasion warrants. Each investigation should be made by a man particularly fitted for the job, and this man made responsible, but he should constantly consult with other members of the staff whose knowledge or skill would be helpful. The progress made and the difficulties encountered should be presented to the Research Committee at its regular meetings so that it can advise when necessary. At the conclusion of each investigation: (1) a detailed report is made to the supervising chemist; (2) an exact estimate of the cost is made for each investigation. This will show the profit or loss in each particular case and will demonstrate the value of the research work as a whole.

THE SUPERVISING CHEMIST.

If a corporation has more than one laboratory, uniform methods of sampling, of chemical analysis and physical tests must be used throughout. The selection of standard methods and the complete written description of each should be under the immediate charge of the supervising chemist. Their accuracy should be first proved by analyzing mixtures of known composition. The various precautions to be observed should be prominently outlined at the end of each method, together with the experimental data, and where possible, equations showing the accuracy of the method. These methods should be issued to the different laboratories, and all chemists of the corporation required to strictly adhere to them. Without this, uniform methods and uniform results are impossible.

He assigns to his first assistants all analytical work which will aid the departments for Purchase, Manufacture, Sales and Engineering. He carefully investigates new methods of analysis and considers complaints presented by the sales department. He should call a weekly meeting of the chief chemists to discuss:

1. The company's standard methods of analysis.
2. Abstracts of promising analytical methods; and physical tests.
3. Patents of interest to the rubber industry.

A digest of this meeting should be forwarded to all the chemists of the company for comment and for filing. He has in his office a card index which contains condensed abstracts of all relevant articles from the chemical journals. One file is devoted to "Rubber-chemical" articles while another contains indices to "Related Industries." Such an equipment facilitates considerably the investigation of any problem which is presented for his consideration. He should request of his chief chemists carefully worded reports of all work done and these should contain all results, whether favorable or otherwise. New methods (physical and chemical) suggested through the literature or through other chemists of the company, should be tried out, and if found to be an improvement they are incorporated in the Standard Methods of the company.

The policy of the supervising chemist should be to give his chief chemists a broad acquaintance with all the work of his department through the weekly meetings. All work should be systematically and independently checked by more exact or by different methods than those in daily use. Each man is held strictly responsible for the work entrusted to him, and he should be encouraged to become thoroughly familiar, through study and inquiry, with the theory and practical application of his work.

Foremen should, so far as possible, make simple tests to control processes under their charge, as they can often make a test in less time than it takes to send the sample to the Central Laboratory. Such work must, of course, be periodically checked by the laboratory. In order to estimate each man's capacity and to charge up the chemical work carrectly a Laboratory Order Blank is used. These are numbered consecutively and a different color is used for each section (Factory, Buyer, Sales, etc.) One order accompanies each sample or request for laboratory investigation. It has a place to record:

Date on which the sample or request was received at Laboratory.

Actual number of hours spent on the investigation.

Date on which the results were handed in.

Results obtained; recommendations.

Signature of the chemist, the supervising chemist and the department for which the investigation was made.

The "History of the Case" can be conveniently typewritten on the back of the order. The completed order is filed in the laboratory, separate cases being used for each section. In order to prevent delay, due to loss of an "original" order, a carbon copy is made and this is filed in a case in its proper numerical order. No chemist undertakes any work without a Laboratory Order Blank of which a carbon copy has been filed. The "History of the Case" should be entered at least on the carbon copy. The laboratories of the several plants should be strictly subordinate to the supervising chemist. All standard methods of sampling and analysis must be standard methods of the company, so that superintendent and chemists should cooperate for their strict enforcement.

Salaries of the chemists should be standardized as far as possible and promotion made according to the kind of talent which the individual possesses. Thus it is found that some men are far better adapted for superintending factory work, while others are peculiarly fitted for research. The efficiency of the chemical department may be increased by:

1. Periodic visits to the different laboratories of the company by the supervising chemist, in order to see that the standard methods are being properly followed, and to enable him to compare the general efficiency of the plants.
2. Occasional visits of the supervising chemist to laboratories of other industries, in order to incorporate in his organization the favorable developments made by others.
3. Periodic general meetings of the chemists to promote cordial cooperation and to discuss specific subjects.
4. Periodic exchange of chemists between the different laboratories, to broaden the experience of the individual chemist.
5. Monthly reports by each laboratory of the company to the supervising chemist explaining all difficulties encountered in investigations, and making suggestions for improvements in existing methods.

Laboratory buildings should be roomy, adequately lighted, well ventilated, and equipped with all apparatus required for accurate, rapid work. Unhealthful, dismal surroundings and crowded quarters interfere considerably with efficiency and progress in chemical work. Slovenly arrangement of notes and samples should not be tolerated by the head of the laboratory.

The Central Laboratory and office should have all important chemical and engineering periodicals in an easily accessible file, and should possess a permanent library of the best books on these subjects. All the laboratories should be in the same building, so that the library may be easily reached and the individual chemists may have consultations. In the case of a corporation with plants in different cities, the Central Laboratory should be connected with one of the large plants, so that mechanics will be available for construction work in the laboratory. Such a location makes it possible for the chemists to ask advice of the foremen and superintendents. Certain rules, such as those given below, might well be posted in the laboratories:

1. The accuracy of balances, weights and measuring apparatus, thermometers, and hydrometers, must not be taken for granted. They must be checked for accuracy by comparison with standards of known accuracy as often as required.
2. All standard solutions must be checked by the head of this laboratory or one of the chief chemists.
3. All important determinations must be made in duplicate.
4. All clerical work and calculations must be checked.
5. Systems of weighing and manipulation, devised to prevent errors, should be employed, and adhered to even in the simplest determinations.

The form of organization, just described, must never take the semblance of dull routine. The personnel must be of the highest type and all necessary plans must be carried out with enthusiasm and thoroughness. The interest in the work can be decidedly sharpened by having the chemist come into personal touch with the department for which his work is being carried out.

The laboratory department should lead the way so strikingly, that its methods are never justly censured. It should, by precept and example, be an exponent of the profession of chemistry.

The plan just outlined provides for a chemical department with one supervising chemist and five first assistants, but it will readily be seen that the functions of these chemists must in certain cases be embodied in a smaller number of men. This should, however, not interfere with the sub-division of work, and great care should be exercised, in keeping records as to the time spent on any investigation and the results arrived at. For this purpose an adequate system of Laboratory Order Blanks should be installed in the manner indicated. (See "Supervising Chemist.") The supervising chemist must interview his assistants at least once each week and obtain from them written reports of progress.

In one case which was brought to the speaker's notice, the corporation professed that such a corps of men could not be maintained, as the cost would be prohibitive, yet that same factory was operated in such a manner that every three workmen were doing work which could, without any undue training, be performed by two men. That corporation was keeping down its production by employing unproductive men in quantity, at a minimum wage of $10 per week. A large part of the success of chemical supervision will, of course, depend on the use made of the laboratory by the factory manager, the buyer and the sales manager. Parkhurst has called attention to the need for showing clearly the line of authority and the responsibility of each individual. The duties of each person must be determined and the positions should be filled by men who have had an adequate training in chemistry. The factory manager should be so sure of his ground that he will not have to fear anything from an inspection of the factory by the supervising chemist; on the contrary, he should draw the chemist into his confidence and call his attention to "weak spots" in the chemical processes, so that he may benefit by his suggestions. This point is fully covered by that basic principle of factory management: "Each and every employe shall be supplied with written instructions describing fully his duties and responsibilities.' Important details of a process are sometimes forgotten, because an employe who was at one time given oral directions, has died or has been transferred to another department.

In the laboratory, as in all other departments, remarks such as "RUSH," etc., should be omitted from an order. In their place should be put a definite date on which a report is desired. This makes it impossible for any work to be postponed as a matter of convenience or on some other weak plea. If a new material is offered to the purchasing department, it is important to know at an early date whether it is desirable or not, and the same remark holds good for material which is tested previous to shipping, by the sales chemist.

Thus it is seen that scientific management includes not only the factory, but the purchasing and selling departments as well. It resolves itself into—buying the best material of a given grade at the lowest possible price and the sale of a finished product of a given quality at the lowest possible price. To accomplish this end, our most progressive manufacturers have drawn to their aid the services of one or more men exercising the above functions.

Note: For collateral reading see W. C. Ferguson on "Organized Research and Analytical Chemistry," read at VIII International Congress Applied Chemistry, 1912.

Some Observations on the Testing of Steam and Air-Brake Hose Used on Railway Locomotives and Cars.

By G. C. Bishop.

(Superintendent Motive Power of the Long Island Railroad Co.)

PREPARED FOR THE THIRD INTERNATIONAL RUBBER CONFERENCE, HELD IN NEW YORK IN 1912.

WE will first consider air-brake hose of 1⅛ inch x 22 inches and 1⅝ inch x 22 inches. We will pass over sizes and badge plates, which are not important as far as the observations in this paper are concerned. On a certain sample of hose the specification called for (1) a bursting pressure of 500 pounds per square inch exerted for 10 minutes; (2) at a pressure of about 200 pounds per square inch, the hose must not expand in diameter more than one-quarter inch or change in length more than one-quarter inch; (3) a friction test: with a weight of 25 pounds suspended from the end the separation must be uniform and regular and the average speed must not exceed six inches in 10 minutes; (4) a stretch test: between marks two inches apart on a piece one-half inch wide, stretched quickly until the marks are 10 inches apart, released, then re-marked as at first and again stretched to 10 inches, the specimen must remain 10 minutes without breaking; and (5), after release the distance between the marks must not show a permanent set of more than one-quarter inch.

The 1⅛ inch x 22-inch air hose is used with an automatic connector of the general appearance shown below:

Data sheet "A" shows the number of hose lengths removed for all causes during the year from November, 1911, to November, 1912, this being classified under (1) the general causes for removal, and (2) the life. The total number of hose purchased of each make for a period of three years is also shown as an indication of the proportion of the different makes of hose in service. The different makes of hose are designated by the letters "A" to "H" inclusive.

It will be noticed that a large proportion of the hose is removed because of being damaged in service. This is largely due to the automatic connector, which increased the chafing and cutting of hose.

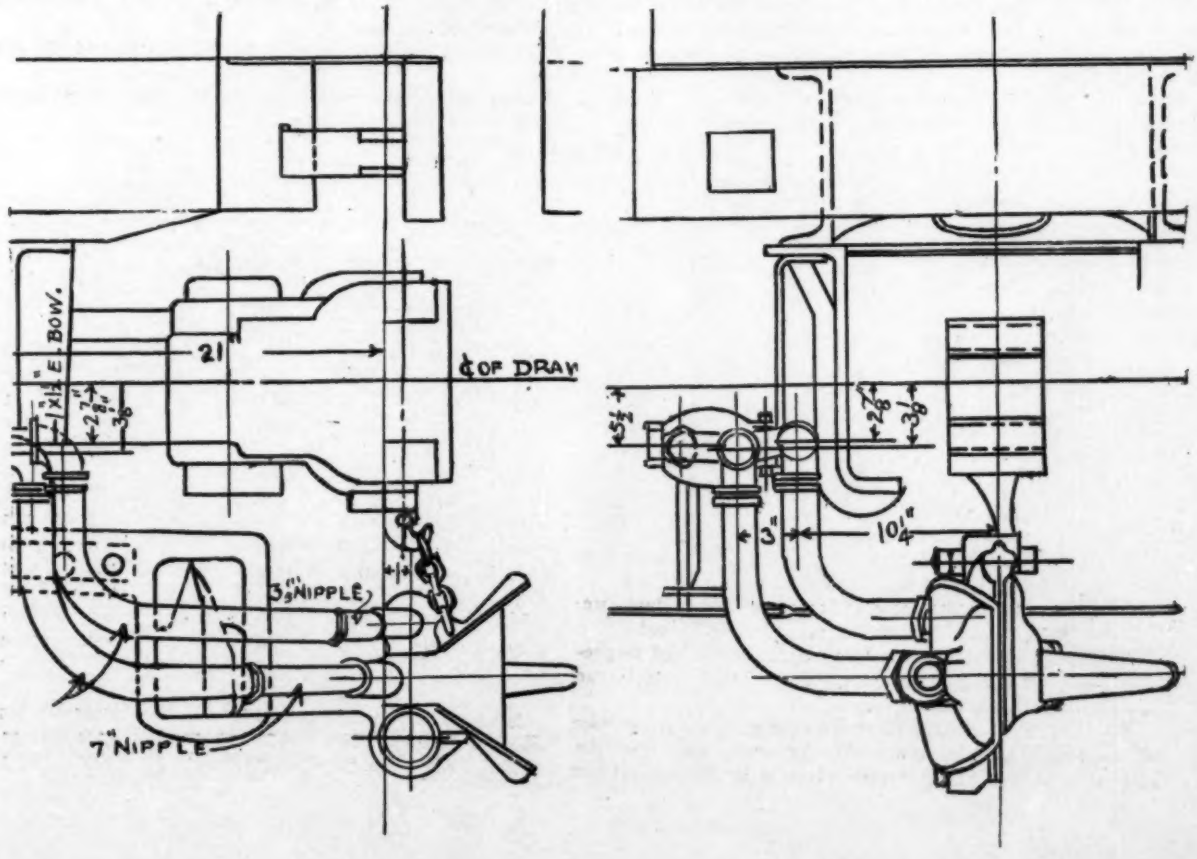
Little can be learned from makes "B" and "H," as they represent purchases made three years ago, and only the oldest hose was removed in the period covered by our data. It is interesting, however, to note that the removals of "B" hose represent a comparatively high percentage of the amount purchased, and the high *average life* checks with the high *average characteristics* shown by the tests.

"F" hose, it will be noted, shows a large percentage of rejections and from our inspection of the results of the tests the reason is apparent. The friction is below the average, and the stretch just passes. Although the bursting tests are not shown, the rejections are numerous and the lots accepted were just within the requirements. This hose was all purchased in the year 1912.

"A" shows a fair life, and the results of the tests closely approach the general average.

"C" represents one purchase only, but the test results were uniform and very good; the explanation of the low life is that the hose was soft and a considerable quantity failed shortly after application due to inability to properly clamp the hose around the nipples.

"D" shows a good life, even though the percentage of damaged



DATA SHEET "A."

PERFORMANCE 1⅛ INCH AIR HOSE, PASSENGER.

Cause of failure, per cent. Average life in months	Item	A	B	C	D	E	F	G	H	Totals
	Damaged in service	410	174	28	46	23	109	21	5	781
	Per cent. of total	24.2	29.0	24.6	41.8	38.3	50.2	22.6	41.7	26.9
	Average life, months	14.8	14.0	9.9	10.5	7.68	5	11	27	12.62
	Bursted in service	441	107	19	34	12	47	26	2	6.85
	Per cent. of total	26.0	17.8	16.7	31	20.0	21.6	28	16.65	23.6
	Average life, months	15.5	16.43	9.68	14.1	15.75	7.53	14.24	27	15.1
	Deteriorated	574	251	23	51	23	36	29	3	9.68
	Per cent. of total	33.8	41.8	20.2	46.4	38.3	16.6	31.2	25	33.4
	Average life, months	19.4	19.7	9.65	31.6	25.4	16.54	18.85	27	19.0
	Other causes	270	98	44	10	2	25	17	2	4.62
	Per cent. of total	15.9	16.35	38.6	9.1	3.33	11.5	18.3	16.65	15.9
	Average life, months	15.6	16.8	9.52	11.8	19	6.96	12.75	2.55	1421
Total failures		1695	600	114	110	60	217	93	12	2896
Amount purchased in 3 years		7500	2100	500	1900	500	2800	1000	300	16600
Per cent. failed in 1 year		22.6	28.5	22.8	5.8	12	7.75	9.3	....	17.75
Average life		16.05	17.5	10.26	16.5	16.11	8.3	17.73	25	17.5
Amount inspected		7700	2100	500	1900	500	4000	1000	300	18000
Amount accepted		7500	2100	500	1900	500	2800	1000	300	16600
Amount rejected		200	....	....	....	....	1200	....	....	1400
Per cent. rejected		2.6	....	....	....	....	30	....	....	7.85
Average friction in 10 minutes at 25 pounds		1.28″	.99″	1.167″	1.15″	1.38″	2.07″	1.23″	4″	1.29
Outer tube stretch		.199″	.204″	.142″	.194″	.135″	.208″	.20″	.125″	.1952
Inner tube stretch		.216″	.142″	.142″	.163″	.225″	.227″	.225″	.125″	.1955

hose is high the removals are small, and the test results are better than the general average.

"G" has a good average life probably due partly to the small percentage of hose damaged in service. The average result of the test is good, with the exception that the stretch of the outer tube is above the average.

1⅛ x 22-inch air hose is used on freight cars only, and is not subject to the peculiarities of the auto hose connector as is the case with the 1⅛ x 22 inches.

Data sheet "B" shows number of this hose removed for all causes during the year from November, 1911, to November, 1912, this being classified in the same manner as the 1⅛ inch x 22-inch air hose.

Makes "E" and "H" represent small purchases made about three years ago, and may be eliminated from a study of the data as our records cover only the hose having probably the longest life.

The same criticism which applied to make "F" of the 1⅛ inch x 22-inch air hose applies in every particular to the 1⅝ inch x 22-inch air hose.

"G" may also be eliminated as none was purchased during the three-year period and only five failures are recorded.

"A" and "B" represent a considerable number of lengths with sufficient failures to afford proper comparison. The results of tests indicate that "B" is the better hose and this is confirmed by increased life.

"C" hose has a friction inferior to the average and the life is low.

"D" has the highest average life and the tests show a good inner tube and the best friction.

DATA SHEET "B."

PERFORMANCE 1⅝-INCH AIR HOSE, FREIGHT

Cause of failure, per cent. Average life in months	Item	A	B	C	D	E	F	G	H	Totals
	Damaged in service	28	60	6	1	7	7	....	5	112
	Per cent. of total	13	17	28.6	4.06	13.4	22.6	....	5.9	14.25
	Average life, months	10.25	17.55	5.34	12	21.2	9.14	....	35.0	14.4
	Burst in service	128	193	7	14	29	14	2	46	43.3
	Per cent. of total	59.3	54.7	33.3	58.1	55.6	45.2	40	54	55
	Average life, months	21.45	22.4	12.05	25.43	23.3	11.15	16.5	26.9	21.02
	Deteriorated	53	87	3	7	15	6	2	34	207
	Per cent. of total	23.1	24.7	14.2	29.1	28.8	19.3	40	40	26.3
	Average life, months	21.8	20.8	12.33	27.5	24.3	17.3	27	26.4	22.5
	Other causes	7	14	5	2	1	4	1	....	34
	Per cent. of total	3.24	3.97	23.8	8.12	1.92	12.9	20	....	4.33
	Average life, months	11	17.35	9.8	14.5	24	12	6	....	14
Total failures		216	352	21	24	52	31	5	85	786
Amount purchased in 3 years		3900	5500	500	500	500	2200	....	800	13900
Per cent. failed in 1 year		5.6	6.4	4.2	4.8	10.4	1.41	....	10.6	5.65
Average life		20.7	22.3	12.0	26.9	23.3	11.9	16.2	27.7	21.9
Amount inspected		3900	5500	500	500	500	3500	....	800	15200
Amount accepted		3900	5500	500	500	500	2200	....	800	13900
Amount rejected		....	....	....	....	....	1300	....	....	1300
Per cent. rejected		....	....	....	....	....	37.2	....	....	8.55
Average friction in 10 minutes at 25 pounds		1.57″	.835″	2.5″	.48″	1.5″	1.68″	....	2.13″	1.265
Outer tube stretch		.178″	.165″	.083″	.208″	.23″	.23″	....	.234″	.1505
Inner tube stretch		.194″	.185″	.073″	.146″	.15″	.23″	....	.190″	.1573

From a study of the relation of the service of air hose to results obtained from tests of sample pieces, we draw the following conclusions:

1st—To prolong the life of hose from a possible bursting failure a good friction is necessary.

2d—The quality of the inner tube as determined by the stretch test gives an indication of the probable life of the hose before it fails due to deterioration.

3d—That the outer tube merely serves as a protective coating and the chief requirement is that it remain intact.

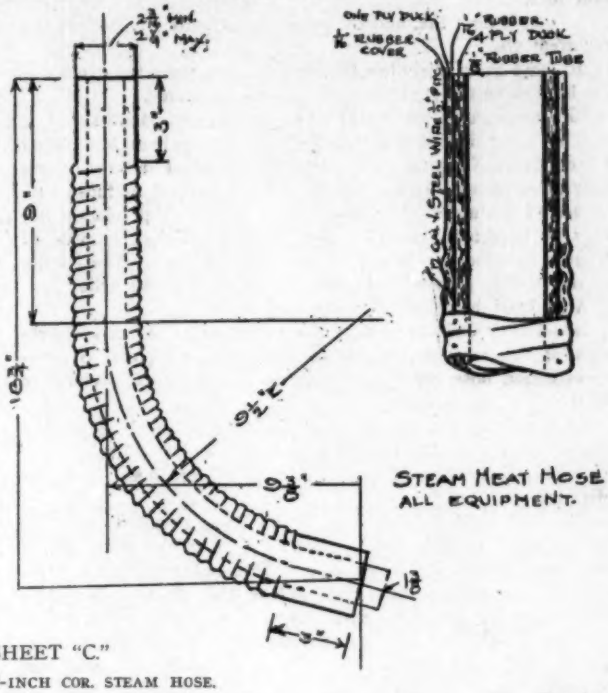
STEAM-HEAT HOSE.

The steam hose from which the following data are compiled was of one size, 1⅝ inch x 24 inches, used on passenger cars, locomotives and tenders. All this is used with an automatic connector illustrated under the discussion of air hose. The construction and shape of this hose are shown annexed.

The essential points of the specification under which this hose is purchased are that the sample piece is to be tested as follows: A piece of the inner tube one-half inch wide cut circumferentially with the grip ends one inch wide, must show an elongation to not less than six inches before breaking (between two marks that have been placed two inches apart). The ultimate tensile strength of this piece must be not less than 600 lbs. per square inch. The friction of a section one inch wide must be such that the duck will not start to unwind with a pull of less than 20 lbs. The remainder of the sample is then placed in a closed vessel, known as a digester, and subjected to dry saturated steam at a pressure of 45 lbs. per square inch for a period of 48 hours. The hose is removed from the digester and sufficient time allowed for it to cool naturally. The tests are then repeated and the stretch test must not show a deterioration of more than 20 per cent. while the tensile strength and friction test must not show a deterioration of more than 30 per cent.

Further, an inspection of the hose after its removal from the digester must not disclose any swelling in diameter or increase in thickness of the various parts and there must be no indication of blisters or loosening of the inner tube.

Data sheet "C" shows number of this hose removed during the year from November, 1911, to November, 1912. The data show: (1) the general causes for removal and (2) average life of hose. The total number of hose of each make purchased is shown as an indication of the proportion of the different makes in serv-



DATA SHEET "C."

PERFORMANCE 1⅝ INCH x 24-INCH COR. STEAM HOSE.

	Item	A	B	C	D	E	F	G	H	Totals
Cause of failure, per cent. Average life in months	Damaged in service	....	....	8	....	7	....	1	....	16
	Per cent. of total	....	....	2.43	....	4.02	....	33.3	....	3.08
	Average life, months	....	....	12.3	....	6.86	....	15	....	11.25
	Burst in service	....	....	168	....	102	....	1	....	271
	Per cent. of total	....	....	51.4	....	58.5	....	33.3	....	53.7
	Average life, months	....	....	12.74	....	67.5	....	15	....	10.26
	Deteriorated	....	....	111	....	64	....	1	....	176
	Per cent. of total	....	....	34	....	36.8	....	33.3	....	35.0
	Average life, months	....	....	13.84	....	7.97	....	27	....	12.02
	Other causes	....	....	40	....	1	....	....	....	41
	Per cent. of total	....	....	12.22	....	0.58	....	....	....	8.15
	Average life, months	....	....	12.53	....	6	....	....	....	12.4
Total failures		....	....	327	....	174	....	3	....	504
Amount purchased in 2 years		400†	....	400	....	800	....	400	....	1600
Per cent. failed in 1 year		....	....	82	....	21.5	....	.75	....	31.5
Average life		....	....	13.1	....	7.43	....	10.0	....	11.95
Amount inspected		....	....	400	....	1400	....	400	....	2200
Amount accepted		....	....	400	....	800	....	400	....	1600
Amount rejected		....	....	....	....	600	....	....	....	600
Per cent. rejected		....	....	....	....	43.0	....	....	....	27.0
Average friction before and after digester test		....	....	25 lbs.	....	23.7 lbs.	....	27.3 lbs.	....	24.3 lbs.
		....	....	17.5 lbs.	....	16.6 lbs.	....	22.5 lbs.	....	18.2 lbs.
Inner tube elongation from 2 inches before and after digester test		....	....	9″	....	8.2″	....	8.5″	....	8.45″
		....	....	6.5″	....	7.3″	....	6.3″	....	6.8″

Average No. steam-heated cars operated in last two years..... 407
Average No. steam-heated cars operated in 2 years previous to above 384
Specification hose purchased in last 2 years..... 2000
Non-specification hose purchased in 2 years previous..... 3,300
Specification hose used per car year..... 2.5
Non-specification hose used per car year 4.3

†This hose considered only as to total consumption in last two years. No records as to tests.

ice. Further, a comparison is made between service life of hose purchased from November 1, 1910, to November 1, 1912, under the specification described and hose purchased the previous two years without specifications.

Make "A" represents hose purchased about November 1, 1910, under specification, but there is no record of tests; so this hose is not considered except in the comparison with the non-specification hose.

"C" has a high life, and the tests show results well within the requirements.

"E" hose has a fairly low life, and the tests show the quality of the hose to be the poorest of the makes considered.

"G" hose shows an average life of only ten months, but it will be interesting to note that the most of this hose was placed in service in November, 1911, and the record of failures covers only three pieces. This is but ¾ of 1 per cent. of the hose purchased of this make. The indications are that a high average life may be expected from this hose when a sufficient number of lengths have been removed to give accurate data. The quality of the hose as shown by the tests would confirm this belief.

A study of the information collected shows:

1st—The desirability of purchasing hose under proper specification as the consumption has dropped from 4.3 pieces of non-specification hose per car per year to 2.5 pieces of specification hose.

2d—That the service life of steam hose is largely dependent on the quality of the friction between the layers of duck, as indicated by tests made after removal of test hose from the digester.

3d—Tests made of this hose before being subjected to steam pressure do not give much information as to the suitability of the hose for the required service. This indicates that a satisfactory specification need not include this steam test. It is thought, however, that better steam hose can be procured by raising the friction test and stretch test. A specification now being tried requires that the properties before and after the digester test be the same.

PRIVATE ENTERPRISE IN THE BELGIAN CONGO.

ACCORDING to a statement of Grisar & Co., Antwerp, in their annual review, the cession to private enterprise of the gathering of vegetable products in the domains of the Belgian Congo, has been of general application, since July 1, 1912. The Governor-General has given instructions to his staff to promote in every way the establishment of business houses and the success of their operations.

While it is possible that the lactiferous stores of some forests may have been in some degree exhausted by several years of uninterrupted tapping, it is not less true that a good many districts are immensely rich in plants yielding latex, some of which have never been exploited. The hope is expressed that companies and individuals will now devote their efforts to deriving the utmost possible advantages from the resources of the colony in rubber and gum copal.

It is to be regretted that since immense zones of territory came into the control of individuals, the blacks, stimulated by competition, abandoned their previous rational methods of cultivation, and are now delivering rubber of an inferior grade, lots of good quality forming the exception. Hence, it is hoped that conservative measures will be adopted, to preserve to the colony its principal article of export. This end would be attained by refusing permission to export rubber badly coagulated, imperfectly dried or defectively packed. Rubber containing an excess of impurities, indicating a fraudulent intention, should also be stopped. Such regulations have been, it is added, adopted in certain French West African colonies, to the general benefit.

But, it is urged, these measures can only be regarded as palliatives. The idea must be more and more developed, that the future belongs to the planters, whose trees, under rational treatment, will supply the industry with a product of high quality, at prices with which the forest industries cannot compete.

With the object of promoting the creation of agricultural or planting enterprises, the Government accords the right of occupation for five years, of open domain lands, with the privilege, at the expiration of that time, of purchasing or leasing them.

Facilities are granted to parties desirous of establishing and operating factories, for the acquisition of suitable locations on lease or by purchase.

UNIFORMITY IN PLANTATION RUBBER.

IN COMMENTING editorially upon this subject, the "Times of Ceylon" remarks that when there is a type of rubber produced in fairly large quantities, of uniform and known quality, it is naturally much sought for, being set apart for the manufacture of particular articles, for which it has been found suitable. If such a quality is not available when required, considerable inconvenience results.

Attention is called to the fact that the usual forms of plantation rubber are subject to varied treatment on different estates, and even, sometimes, on the same estate. They are coagulated with such varied percentages of acetic acid (sometimes with different acids), that the buyer never knows what he is to expect at the different auctions. As a result, Brazilian rubber, such as fine hard Pará, which can always be depended upon, has a material advantage over its competitor.

The concluding words of the article thus emphasize its salient points:

"Whether or not it turns out that Eastern producers have been proceeding on erroneous lines, and will have ultimately to fall back on the old Brazilian methods of treatment, it is certain that either collectively or individually they will sooner or later have to standardize their factory work. It is, of course, open to sufficiently large producers to settle the matter for themselves; for by producing rubber of uniform qualities they can secure a steady market for their own marks. This is practically what has been done by the estates which realize such excellent prices for their smoked sheet."

This opinion on the part of the "Times of Ceylon" is founded upon the results of the personal investigations made by its editor at the late rubber exposition. It will therefore doubtless be appreciated by planters, as illustrating the practical side of the question from the standpoint of an acknowledged expert.

THE RUBBER CURING PATENTS SYNDICATE.

According to the "Malay Mail," an English company has been registered with a capital of £45,000 ($225,000) for the general purpose of acquiring inventions relating to the drying, smoking, curing and coagulating of rubber latex. The objects of the company include the adoption of an agreement with the Rubber Chemical Co., Limited. The process specially in view consists of a portable and simple smoking apparatus, the working of which is said by those who have seen it, to be effective and at the same time cheap.

NEW PLANTATION PROCESSES.

Exclusive patent rights in the Straits Settlements have been granted Mr. Noel Fisher, of the Harpenden Estate, Selangor, for a spout to be used in tapping rubber trees. Similar rights have been granted Mr. D. W. Weigel, Colombo, for a process of coagulating and defecating latex; as well as to Mr. Walter Jackson, of Singapore, for a compound intended to produce smoke for curing rubber.

TRADE MARKS FOR PLANTATION RUBBER.

In line with the idea of standard qualities of plantation rubber, is the registration of trade marks by rubber plantations. English advices report that the Highlands and Lowlands Pará Rubber Co. has taken out a trade mark. This consists of its established shipping mark—a crescent and star, with the word "Highlands."

Imitation Horn and Whalebone.

AN interesting article on this subject has recently been published in Germany by Hood, and it is here given in free translation.

Whalebone is used in great quantities for different industrial purposes, for instance, as inlays for ladies' hats and corsets, for walking-sticks, umbrellas and whips, for certain kinds of artificial flowers, buttons, boxes, etc.

Its advantages lie in its great elasticity; for this reason it has been so largely used in corset manufacture. In order to work it up for buttons, boxes and similar articles, it must first be softened by steam or hot sand; it may then be pressed in molds and afterwards polished.

The consumption of this rather expensive material is so great that the various industries could not do without imitations thereof. It is imitated in several ways and in great quantities. A good imitation should, however, possess as far as possible, and to as high a degree as possible, all the good qualities of the natural whalebone; for this reason, it is well to discuss these latter qualities.

The so-called black whalebone comes from the mouth of the bearded whale; the sickle-shaped bent horn-like plates, which are in the mouth on each side of the upper jaw, to the number of 250 to 300, with the wide sides lying together, take the place of the teeth of the ordinary whale. These so-called "beards" are fringed at their outer edges, and hang in strands from the jaws, forming the so-called "beard." They not infrequently reach a length of 12 to 16 feet, and are from 12 to 14 inches wide, and about 2½ inches thick. A single whale will yield about 1,600 to 3,500 pounds of whalebone. When the "beards" are removed from the mouth of the dead whale, they must be cleaned and split into sheets—this latter process being very readily accomplished; then dried and cut into as long pieces as possible and boiled soft in water. The plates are then separated, according to the use which is to be made of them, into rods, which are then shaved and wet polished. For the latter operation pumice-stone and felt are used; these rods are then rubbed with air-slaked lime.

The principal advantage of the natural whalebone lies, as before said, in its great elasticity. But the material possesses also great tensile strength and toughness, with no low degree of hardness; and is readily split. It is exactly this facility of splitting, making it possible to cut thin strips without any trouble, that makes the material especially valuable for corsets and the like. The shops in which the whalebone is freed from the fringes are called whalebone tearing shops; there are such in Berlin, Hamburg, Bremen, Vienna, Amsterdam and Copenhagen, which cities are the principal centers of the whalebone industry. The fibers which result as waste from the manufacture of whalebone for umbrella-makers, tailors and whip-makers, are used for upholstery. They are very similar to horse hair and are used for the same purpose.

Another material of quite different character is the so-called "white fishbone" coming from the cuttle-fish, which has a yellowish white limy shell which shines like mother-of-pearl, and is used almost exclusively for polishing fine wood, meerschaum, ivory, etc.; also for tooth powder. It has nothing in common with whalebone.

As regards the cheaper imitation whalebones, there are some which are not to be compared with those of india-rubber. For instance, there is the process covered by Munk's German patent No. 72923, which treats hides with lime and a solution of sulphite of soda, and then with a heavy solution of chromate of lime; then dries the material and subjects it to heavy pressure. The material thus obtained possesses the essential properties of corset whalebone, but is readily damaged by moisture; it must therefore be impregnated with varnish or a solution of india-rubber to make it weather- and sweat-proof.

A very remarkable substitute for whalebone is an elastic material patented by Tharin & Petit in Germany (No. 77218).

Paper is cut into thin strips and about 20 of these are laid together and drawn through a bath of concentrated sulphuric acid. If these strips are then passed between rollers, they are united into a firm parchment-like elastic piece, which may be cut into strips or rods that may be employed for corset making and the like.

According to the German patent of Pirazzi & Co. (No. 72551), a substitute for whalebone may be made by bleaching certain intestines after thoroughly cleaning with strong lye, and then treating them with a thin adhesive material. The product thus obtained is made water-tight by dipping in tannic acid, next dried and then varnished.

These are only some of the substitutes for real whalebone. There are numerous other recipes, and the substances made thereby are most varied in quality.

But the imitations made by the employment of india-rubber—for instance "balenite" and "plastite"—not only are good substitutes for whalebone, but serve to replace horn in the manufacture of articles for which whalebone would not be suitable.

"Hard" or "horn" rubber (also called ebonite) may be made into a good substitute for horn and whalebone. According as it is compounded, the resulting mass has a greater or less degree of elasticity, color, hardness, resistance to pressure, etc. Sometimes the substances are added only to cheapen the product; sometimes to perfect it. This is true in the case of balenite and plastite, which may be called imitation whalebone. We must not lose sight of the fact that horn has very much the same qualities as whalebone.

Natural horn is yielded by ordinary cattle, goats, giraffes and the "rhino." The so-called "horns" of deer are not made up of horn at all, but of bone; being only an excrescence of the skull; and may be considered the same as a tusk.

The composition of balenite varies according to the articles which are to be made therefrom. Elasticity is the main consideration. The mixture is usually about 100 parts by weight of india-rubber, 20 each of shellac, calcined magnesia, sulphur and flowers of sulphur. The hard ingredients are pulverized, well mixed and then kneaded with the india-rubber. From this plastic mass there are made plates which are cut into strips. Then comes the vulcanizing, which according as an elastic or a hard tough material is desired, is done under a comparatively low or a high temperature. But no balenite is as hard and brittle as hard rubber. The product is used for cane-handles, sheaths of sabres, cigar cases, knife and tool handles, etc.; but more especially as a substitute for whalebone. It may be polished just like ebonite.

An equally useful product is plastite, which has a deep rich black color and may be planed, turned and polished. This material also is suitable for use in place of whalebone. By proper handling it may be given a very high degree of hardness and is often used to make articles which would otherwise be made of stone or metal; also to take the place of horn. In making the plastite mass, many different materials may be used as "fillers"; especially magnesia, by reason of its light weight. A common recipe is 100 parts of india-rubber, 40 to 50 each of magnesia and flowers of sulphur, 20 of sulphur, and 50 of coal-tar. Laboratory tests are always necessary to determine for what purpose the mass is best adapted. In order to make the mixture more plastic, it is first worked, next pressed in molds, and then vulcan-

ized. A great advantage of the mass is that it contains but a very small proportion of india-rubber; but for all that has about the same properties as the pure material. The price depends entirely upon the greater or less proportion of india-rubber; the efforts of the manufacturers being always in the direction of obtaining perfection in the product with as low a proportion of india-rubber as possible.

"FELRUBITE" AND "MASCOLITE."

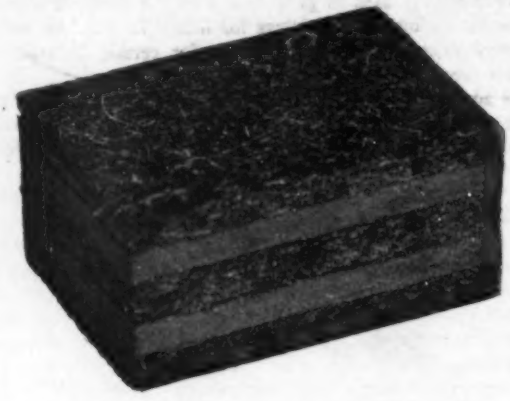
A COMPARATIVELY new material has come upon the market for use in covering floors and walls where it is especially desirable to avoid vibration and sound. It is called "Felrubite" and consists of a layer of felt covered with a layer of rubber. These two layers are joined together so effectively that they produce practically a solid uniform material which does not come apart under any conditions of use. The specially prepared felt backing acts as a cushion and gives resiliency that materially decreases the wear on the rubber surface, and thus increases its serviceability. This material is made in various thickness from 1/16 to 1/4 inch and even thicker. The accompanying illustration is made from a photograph of a section nearly 1/2 inch thick.

The advantages of this material in places where it is desirable to deaden noise and stop vibration are obvious. It is particularly serviceable in railway cars, motors and boats, and for all vehicles where there is more or less jar from machinery. It is well adapted, too, for passage ways and corridors which are not particularly well heated, as it is proof against cold as well as against sound. As a wall covering it can be fixed to any surface

A CAR PLATFORM WITH "FELRUBITE" FLOORING.

and is not shaken loose even where there is considerable vibration. As all the joints are made with a special pliable water-proof cement, preventing the penetration of water below the rubber surface, it makes a water-proof and moisture-proof covering. It is less expensive than solid rubber covering, and is made in all the ornamental designs, marbles, mosaics, etc.—in which rubber tiling is usually made, and in whatever colors the design may call for. It can be used to advantage in lavatories and other places where rubber flooring is particularly desirable. It makes a specially good flooring in a billiard room.

Another material similar in principle and made by the same English manufacturers who have put "Felrubite" on the market, is "Mascolite," which has been in use on the Continent for quite a number of years. "Mascolite" is made in several different ways.



INSULATED "MASCOLITE" OF FELT AND RUBBER.

One form is simply a layer of felt made of a special mixture of fibers selected after long tests as the best sound and vibration absorbers, and then treated so that it is damp and insect-proof, and will stand any climate changes without alteration. A little more advanced form consists of interposing between layers of this prepared felt layers of cork; and a still different form which is used for insulating purposes, consists of five layers of material, the two outside and the middle layer being of felt, and the two alternating layers being made of vulcanized rubber. In its various forms this "Mascolite" is used as a bedding for machinery where there is a great deal of jar, or in the roadbeds of railroads for the purpose of absorbing the vibration. Its usefulness under machinery is obvious, especially where machines are installed in buildings with steel frames, as is often the case in this country. Here, if the engine or machine—particularly if it it is a grinding machine—rests upon the floor or even is placed upon a bed of cement, the vibration is communicated to the steel structure of the building; and the effect—particularly where there are many machines, as in buildings occupied by printers—is to impart to the entire building a continual quiver which is not only uncomfortable, but which greatly increases the wear and tear of the machinery. The layer of "Mascolite"—particularly of the thicker varieties—absorbs practically all of this jar, and many machines can be in operation simultaneously in the same building with little effect, either upon the building or upon one another.

It is also a useful material in the roadbed of railroads, and especially in underground railroads where the noise, unless means are taken to deaden it, is almost deafening. This material has been used in certain Russian railways for the last seven years, and the result in decreasing the wear on the rails and on the rolling stock has been very perceptible. It is used in railway tracks to best advantage by putting a layer under the chair or plate that holds the rail to the sleeper. Where the railway is an elevated structure, "Mascolite" can be used to advantage at the foot, or at the top, of the column, or in both places, and also between the rail and the sleeper. This material is so thoroughly water-proof that it is not affected by exposure to the weather, and, it remains resilient, while at the same time it will stand the greatest weight without being pressed out of its original shape, or taking what builders call a "permanent set."

THE RUBBER TRADE IN AKRON.

By a Resident Correspondent.

AT the time of writing this, a strike among the rubber workers in Akron has been under way for ten days, and has assumed a serious aspect. The leaders of the I. W. W. and of the American Federation of Labor have been exceedingly active in getting the rubber workers to join their organizations. A great many of the employes are standing loyally by their employers, but it cannot be denied that the work of the rubber factories at the present time in this city is badly crippled. The origin of the strike came about through a dispute between the management of the Firestone Tire & Rubber Co., and the employees, over a new schedule for tire finishers; the management contending that under this new schedule finishers could make $3.50 a day, while the employes contended that this could be done only by exceptional men under exceptional conditions.

This new schedule was proposed February 11 or about that date. Mr. H. S. Firestone made the following statement regarding it: "This new schedule, which will give the average tire finisher $3.50 per day, was occasioned by the use of more machinery in the production of the tire. By this new machine method one man builds the carcass and the other finishes the tire. That makes two processes where formerly there was but one. The tire finisher was therefore a new feature for us to deal with. We desire to fix a rate that will give the finisher $3.50, believing that to be a just and reasonable wage. While experimenting with the machine we made a rough allowance to the tire finisher of one-third the price formerly given the man who made the whole tire by hand. This allowance was to last only until a reasonable just rate could be arrived at by practice. The temporary rate given tire finishers lasted only a few weeks. It is true that finishers made unusually large wages during that time, but it was understood that it was merely a provisional arrangement. This led to the differences that appeared when our $3.50 scale was reached.

"The rate first decided upon, it was felt, would bring this result. The men in the tire finishing department agreed that under this scale they could on some days earn $3.50, but they felt that they could not maintain this rate week in and week out. After another careful consideration of the whole subject, we decided upon the scale now in force. It enables beyond question any experienced tire finisher who is an average worker to make $3.50 a day.

"The installation of machines for the making of tires makes the labor of building tires lighter, and while the output of tires would be increased, and the rate paid the tire maker less for each tire, the tire makers are able to earn the same average of $3.50 a day with lighter work.

"The new scale affected less than sixty men, but later would have affected more. I am sure that now our men in their own hearts have no grievances and are perfectly satisfied."

Mr. Firestone further said, "There has been nothing in the present situation that we could not or would not have adjusted to the satisfaction of the company and its employes, and all the present trouble in the rubber industry is caused directly by the agitation of men who do not live in Akron, who have no real interest in Akron or its people, and who would, when peace has been restored here, pass on to the next place where trouble will be started."

The workmen refused to accept the schedule and walked out, and have been endeavoring to create a sympathetic strike by inducing the other rubber workers to come out and by threatening to have the strike extend through all the rubber factories in the United States, and by trying to induce the allied trades and the railroad and street car men to walk out. The local and national organizers of the I. W. W. have been in Akron and have tried to arouse discontent among the rubber workers, and to prevail upon them to join the I. W. W. Many without knowing the purpose of this organization have joined it. Several of the smaller factories have felt the effects of the strike more than the larger factories.

Work in the rubber plants is to a great extent dependent upon the different departments working together, and the loss of a few men in one department may tie up a whole plant, so that it is hard to state how many are actually striking, and how many are home on account of some other person striking upon whose work their work depends. At present the State Board of Arbitration is endeavoring to bring about an adjustment. The strikers are peaceful and most of them claim no cause of discontent with their present employment and wages. The conditions of Akron rubber workers have been good and cannot be compared with Lawrence, and with rare exceptions the Akron rubber employe is well dressed, well fed and well housed, which is evidenced by the large number of workingmen's homes which are owned and paid for, or being paid for, by the rubber employes of Akron.

It is believed that all differences will be speedily remedied and efforts to this end are being put forth by the Akron Chamber of Commerce, State Board of Arbitration of Ohio, and by men influential with employers and employes of Akron industries.

A STATEMENT BY THE AKRON CHAMBER OF COMMERCE.

On February 19, the Board of Directors of the Akron Chamber of Commerce issued, and published in the local papers, the following statement, under the caption:

A PLAIN STATEMENT OF FACTS IN BEHALF OF AKRON:

In view of the many misleading and exaggerated reports sent out regarding the rubber strike and rubber strike conditions in Akron, it is only fair to those who have the best interests of Akron at heart and earnestly desire a speedy and fair minded settlement of any difficulties which have arisen, to recount something about where Akron stands in relation to its rubber industry, and reversely, where the Akron rubber industry stands in relation to the welfare of the community at large.

Whatever plea is contained in this article is directed towards but one end—the keeping with us of that prosperity which has made Akron conspicuous—not only as a great manufacturing center, but beyond all, as a good town to work in—a good town to live in.

WAGES IN GENERAL. The 1912 report of the Ohio State Bureau of Labor Statistics is compiled from figures covering the year 1911. The general average of wages paid in Akron rubber factories is considerably higher at the present time than in the year 1911, yet the Bureau's figures show that for 1911 the average annual income of Akron rubber workers, not including superintendents, salesmen, and office help, was $655.08 each, for an average of 278 days at work—the average daily earning for workers (both men and women), being $2.36. The average work day was 10 hours.

Comparing the general average of wage conditions in Akron with other cities, from figures contained in the same report, it is seen that Akron factories paid to wage earners in 1911 a total of $14,259,262.30, as against a total of $13,984,129.09 so paid in Dayton and $13,561,048.95 so paid in Toledo, each of these cities being much larger in point of population than is Akron.

AKRON PAYS ALL WORKERS WELL. The tremendous growth of the rubber industry in Akron and the consequent ever-growing demand for workers, has established in this city a wage standard above the average in every other field of industry. Manufacturers in other lines than rubber have been obliged to keep steadily recruiting the ranks of employes because their men were attracted away from them by the rubber industry.

Merchants have experienced the same difficulty. Laundrymen in Akron are paying higher wages for women workers than in any other city in Ohio, for the same reason.

The wages on farms adjacent to Akron average above those of most other sections, for the same reason.

AKRON IS A CITY OF HOMES AND HOME OWNERS. There is practically no building in Akron that could in any sense be styled a tenement house. The very great majority of Akron people in every walk of life live in detached dwellings. Figures compiled the past year by the Akron Real Estate Board, *show 68 per cent. of the heads of families in Akron to be home owners*, a figure high above the average, if, indeed, it is equalled anywhere. More than two of every three married men you see in Akron, then, are living in homes of their own.

THE OPPRESSION OF LABOR is so uncommon as to be almost unknown in Akron. Conditions are not all ideal, but as to sanitation, light, ventilation, and proper working surroundings, Akron factories are nearly all modern, and in the rubber factories particularly is this true, as most of the buildings have been erected in recent years, and fire-proofing and sanitary conditions have received large attention.

THE EMPLOYMENT OF MINORS, whether boys or girls, is a subject of the strictest attention in the Akron rubber factories, and the laws governing these matters, both as to age limitations and limits upon hours of work, are almost universally observed to the utmost in letter and spirit.

THERE IS LITTLE POVERTY IN AKRON. In shops, in offices, and in stores, Akron is a hive of workers. There is no idle class and there are no vagrants. It may well be a matter of pride, indeed, to every one interested in Akron, that the very ranks of those now on strike in this city, show rarely any but well dressed, and never any but well fed men and women.

Unanimously adopted by the Board of Directors of the Akron Chamber of Commerce, Wednesday, February 19, 1913.

J. EDWARD GOOD, President.
VINCENT STEVENS, Secretary.

* * *

On Saturday, February 15, the Swinehart Tire & Rubber Co. announced that they had let a contract for a new building 102 x 70 and three stories high, absolutely fireproof, being constructed of reinforced concrete. This new addition will be erected on ground just west of the present building at the corner of North Howard and North streets. The rumor that the Swinehart company might remove from its present location to some site where there is more room to expand was confirmed by Mr. Walsh, president of the company. "It is true we are expecting to move to a new site where we will have more room. At present we are looking for a site to build. On account of this new building which we will put up, it will be at least two years before any removal will take place. This building we are forced to build at once as all our output for the coming year has been contracted for, and with our present limited means we will be unable to meet our contracts."

The present number of men employed at the plant is about 300 and the erection of the new building will give employment to many more. The new building will be equipped with an entire new steam plant, new boilers and new engines. The entire three floors will be given over to the manufacture of pneumatic and solid tires.

Other rumors that have been afloat concerning the consolidation of the Swinehart Tire and Rubber Co. were characterized by Mr. Walsh as false. "There is absolutely no truth in these statements. We are an independent company doing business under our own charter."

* * *

F. A. Seiberling, president of the Goodyear Tire and Rubber Co. says: "Goodyear sales for the year 1912 approximated $25,000,000 which came near to doubling the sales of 1911. For several years past, each year has shown a doubled output. It is fair to suppose that this is going to continue. We have twice as many users as two years ago. Contracts from makers are larger than ever before and this means two million tires next year, enough to equip 500,000 cars.

* * *

L. M. Latta, formerly of the Diamond branch of the B. F. Goodrich Co., has resigned his position and is now Office Manager of the tire department of the Swinehart Tire and Rubber Co.

* * *

The B. F. Goodrich Co. expects to break ground as soon as the frost is out of the ground, for a plant at St. Catharines, Canada, to take care of their Canadian trade. This plant will start with approximately 1,000 men and will be increased as business demands.

* * *

On February 18, James C. Baldwin was appointed receiver for the Ohio holdings of the New York Commercial Co., by Judge Doyle. The appointment of a receiver followed a suit filed by A. H. Alden & Co., an English corporation. The Ohio holdings of the New York company are said to aggregate $40,000.

* * *

H. W. French, who for the last several years has successfully represented in Akron the New York Commercial Co. and The Geo. A. Alden & Co., has severed his connection with these companies and is at present with Ed. Maurer. He has opened offices at 513 First-Second National Building, Akron. His many friends wish him continued success. J. C. Baldwin now represents the New York Commercial Co. and the Geo. A. Alden & Co. in this city.

* * *

Among those convicted at Indianapolis for dynamiting were Messrs. Smith and Anderson, of Cleveland, Ohio, who on July 5, 1910, dynamited structural iron in the yards of The Burger Iron Co., at Akron, Ohio, which was being prepared for The Diamond Rubber Co.

* * *

The B. F. Goodrich Co. has just issued its route book covering the territory from St Louis to Denver. The Goodrich Tough Tread tire is the selection of The Studebaker Automobile factory as the standard equipment for 1913.

THE RUBBER TRADE IN BOSTON.

By a Resident Correspondent.

BUSINESS in the various lines of the rubber industry is unequally affected by what many consider an unusual winter. The tire men are all as busy as can be, and probably every factory devoted to this line is beating last year's record. The boot and shoe factories are far from busy, the present season so far having been unpropitious for this business. The rubber clothing men and also those making other lines of raincoats have had a good season, and the demand continues brisk. Druggists' hard and soft rubber goods are seasonably active and, in fact, should naturally be so with two leading syndicate drug concerns competing with each other and extensively advertising these goods at cut prices.

The makers of fire hose are laying plans for town appropriations next month, and garden hose is being ordered for early spring shipment. Belting and packing lines are moderately active, though manufacturers note the tendency on the part of consumers to let the mill supply houses and manufacturers carry the bulk of the stock by buying in smaller quantities and only as needed. The crude rubber people seem to be satisfied with present conditions and reclaimers are active, so much so that they have boosted the prices of scrap rubber way above normal at this season of the year.

* * *

The vicinity of Congress street and Atlantic avenue has become still further a rubber district, so by the removal thereto of one well-known concern and by the opening of an entirely new distributing agency for rubber clothing and footwear. Both stores are large, high-studded, with broad plate-glass windows in both front and rear with excellent light, splendid shipping facilities and right in the heart of downtown business.

The store numbered 524 Atlantic avenue is to be formally dedicated and opened the day this journal is dated, March 1, by J. D. Stiles, manager of the Boston house of Jenkins Bros., whose pump valves, packing and discs are sold in almost every civilized country. This store and basement will enable Mr Stiles to carry all his stock in one place instead of having a large portion of it in a separate storehouse. The offices are fitted up according to the most up-to-date requirements and the store and basement so arranged that the entire stock is available for immediate shipment. The shelving on the side wall, for instance, contains, sorted out into sizes and styles, over 25 tons of brass

valves. The celebrated black and "Jenarco" rubber packing and the valve discs are also sorted out for instant filling of orders. Mr. Stiles has been with this house 25 years, and manager of the Boston store 16 years, being for most of this time a director in the Jenkins Bros. corporation and the Jenkins Rubber Co., of Elizabeth, New Jersey.

* * *

Next door, at 520, the Arco Rubber Co. has opened a jobbing house for the distribution in New England of the clothing and footwear manufactured by the Apsley Rubber Co., of Hudson, Massachusetts. This store is a commodious one, well lighted both in front and rear. It is fitted up in oak, conveniently arranged with offices and sample rooms at the front, while the main part of the floor and basement is arranged to carry, sorted out, all the lines represented in the catalogs of the company. The store is in charge of Mr. H. G. Cressinger, who has been connected with the Apsley interests for some years. This jobbing house will cover New England by means of a corps of salesmen, who will undoubtedly still further extend the sale of the well known lines of rubber clothing and the various brands of rubber boots and shoes made by the Apsley company.

* * *

The New England Leather and Shoe Finders' Association held its annual business meeting and banquet at the American House on the 13th ultimo. Among those who participated in the meeting or attended the banquet which followed were quite a number of gentlemen connected with the rubber heel business, which is becoming quite an industry. The Foster Rubber Co., with its usual enterprise, furnished the cigars for the banquet and these were distributed in envelopes emblazoned with the cat trade mark of the house. The White Rock Water and the champagne were furnished with the compliments of Mr. F. W. Whitcher, of the company bearing his name, manufacturers of the Velvet rubber heel. The O'Sullivan Rubber Co. distributed to each guest a neat silver key chain with a number tag to be registered so that if the keys are lost they can be returned.

* * *

The new reinforced concrete building of the United States Tire Co., at the corner of Massachusetts avenue and Beacon street, is nearly completed and already the sign of the company is emblazoned on both fronts. The building is somewhat wedge-shaped and not very wide at the junction of the two avenues; and with the large plate-glass windows will be one of the best lighted establishments of the kind in the city. It is also one of the best situated at the very beginning or entrance to that section which is fast becoming the recognized automobile centre of the city.

* * *

The Fisk Rubber Co., of Chicopee Falls, in this State, which late last fall gave up its Delaware charter as a $5,000,000 corporation, and reincorporated under Massachusetts laws with an authorized capital of $10,000,000, is now having constructed a new storage house, 240 by 90 feet, three stories and basement, of steel, brick and concrete, to be completed by June or July. This building, which is to cost $400,000, will be parallel to the tracks of the Boston and Maine Railroad and a new siding will be built, giving facilities for loading ten or twelve cars at one time. Their mill No. 7 is being enlarged by the addition of two more stories, thus enabling the company to materially increase its manufacturing facilities—a necessary measure with the present steadily increasing demand.

* * *

Hon. L. D. Apsley, president of the Apsley Rubber Co., was tendered a banquet recently by the Progressive Committee of the town of Hudson and the Progressive Glee Club, which did active duty during the last political campaign. Mr. Apsley, during his term in Congress and ever since has been a close personal friend of ex-President Roosevelt and he was a strong advocate for the principles of the Progressive party; but he is reported to have positively declined to allow his name to be used in connection with any political office, preferring to remain a private citizen and confine his activities to his own steadily growing manufacturing and mercantile business.

* * *

The Boston Chamber of Commerce has planned a most important and interesting trip to and across South America, starting from Boston April 25 and lasting until July 30, during which eighteen important cities will be visited in six South American countries. It will give the tourists an opportunity to study at close range the possibilities of increased trade between the United States and these countries. Prominent in the committee in charge is William H. Gleason, of the Revere Rubber Co., who is doing his full share of the work of securing recognition for those who will take the tour, among the representative business organizations in the various cities visited. Letters have been received from the officials of the various South American governments promising most hospitable welcome.

* * *

The strike of the garment workers last month in this city has hit the rubber trade. The raincoat makers' union of the I. W. W. announced a strike and a number of concerns had the experience of seeing their workmen and workwomen walk out. Up to the present time but few of the large producers have had any very serious trouble with their help.

* * *

The Monatiquot Rubber Works Co. is to build a two-story store house near its factory at South Braintree, Massachusetts. In digging for the cellar a fine quality of granite was discovered and this incipient quarry has been drawn upon for stone for the foundation of the building. The structure will be 70 feet wide and extend 140 feet along the railroad siding, thus facilitating the shipment of goods.

* * *

The Boston Retail Shoe Merchants' Association at its regular monthly meeting on February 13 held a rubber shoe night, when the members were addressed by Geo. H. Mayo, of the Hubmark Rubber Co.; A. S. Foster, formerly of Lamkin & Foster, now in charge of the rubber department of Winch Brothers Co.; George Hutchinson, of Clark-Hutchinson Co., and Fred F. Schaffer, superintendent of the Goodyear India Rubber Glove Co.'s factory at Naugatuck, who told the retail shoe dealers a heap of facts about rubber boots and shoes, which were of interest. The question of multiplicity of styles, the necessity of fit, and the methods of manufacture were the main topics considered.

* * *

The steady and continued increase of business in the clothing department of the Enterprise Rubber Co., of this city, has compelled the enlargement of their sample room devoted to this line of goods. This has been accomplished by moving their sample lines of druggists' hard rubber goods to another location and throwing the space thus secured into the garment sample room, which is now double its former size. This allows for a much better display of the lines and adds greatly to the convenience of their customers.

* * *

Some foreigners are thrifty. A man named Hagop Hadjulian, who works in the Hood Rubber Co.'s factory, charged a fellow-countryman ten dollars for getting him a job in that factory. Later Judge Luce charged Hagop twenty-five dollars for the affair, and Hagop wept.

* * *

The Republic Rubber Co., of Youngstown, Ohio, manufacturers of Republic automobile tires, are making arrangements for opening more adequate quarters for stockrooms, salesrooms and general offices in this city. W. S. Carleton, who has been in charge of the New York office of the company for several years will be in charge.

THE RUBBER TRADE IN CHICAGO.

By a Resident Correspondent.

WHILE the strike in Akron, Ohio, has affected the Chicago rubber market to some degree, the general tone of business may be described as good, and the majority of the trade are predicting that a settlement of the difficulties will soon take place. There is absolutely no feature of the rubber market (aside from the labor difficulties) to worry the local trade, and investigation of the most representative houses in Chicago reveals that they have about all they can do to get orders out on time, and that many large demands for immediate delivery are in hand. The absence of snow during February and the many days of rain-threatening weather had a tendency to cause activity in clothing. The rubber houses that feature their clothing departments had been very much disappointed over business conditions for December and January, and the early part of February gave little promise of better conditions, but since the middle of the month there has been a decided change in conditions and some of the larger houses have employed additional help.

About the only complaint heard is from the scrap rubber men who had been enjoying marked prosperity during December and January. The Akron strike appears to have affected this element to such a degree that there is a manifest feeling of dissatisfaction over general market conditions.

"I may say that there is nothing to be enthused about so far as the scrap rubber market is concerned," said a representative of H. Muehlstein. "The strike at Akron, Ohio, has been of incalculable detriment to the Chicago rubber market, and we are hoping that the trouble may be terminated without unnecessary delay. The present strike is a good example of just how serious labor troubles may affect the rubber market. Perhaps in no other line of the rubber industry in Chicago has there been more general satisfaction among jobbers and dealers than in 'scraps,' because the market has been going along better than normal throughout the winter. Just when we were feeling our best the Akron strike dawned and now we are simply at sea."

Mechanical rubber goods, which have been taking their normal course during the last three months, are now in much greater demand than at any time since the fore part of December and the trade in general reports that they have not the least complaint to find. Drug sundries, which were running ahead of other lines at last report, continue to maintain their excellent showing, and dealers are buying with the confidence that business will continue to be brisk for an indefinite period.

The hoof pad market has not been as encouraging during the last three months as could be wished, and now that spring is near there is a feeling of general dissatisfaction over conditions. The reason for the slack business is that the winter has been marked by so little snow and sleet that at no time has there been active buying. Despite the fact that certain reform organizations have been exerting themselves to the utmost to have the city council make provision for the better shoeing of horses their efforts have been unavailing. Concerns that last winter reported the largest business in their history, due to the extreme cold that prevailed for so long a period, are now complaining of the quiet trade conditions.

* * *

According to the Goodyear Rubber Co. there has been a slight improvement in footwear during the month of February. The present winter has not been a particularly active one so far as footwear is concerned, most jobbers reporting that their volume of sales has been less than in former years. "Now that spring is near there is no question that the footwear market is deserving of a degree of activity," said the representative of the Goodyear Rubber Co. "We are sorry to report that the present winter has not been up to expectations so far as footwear is concerned, but this situation was due to the comparatively mild weather and virtual absence of snow. Whenever such situation obtained in past years the spring trade that followed has always been brisk, and history will undoubtedly repeat itself."

* * *

The Raven Mining Co., which maintains a large office in the Marquette building, has placed several large orders for mechanical rubber goods during the present month. This concern feels that the boom in mining which has prevailed throughout the winter will become permanent and that many of the larger mines will be heavy buyers of mechanical goods during the spring.

* * *

Former Senator Albert J. Beveridge of Indiana is to erect a six-story and basement building at the southeast corner of Michigan avenue and Sixteenth street to cost approximately $125,000, and has contracted to lease the same to the Goodyear Tire and Rubber Co. The building will occupy a lot fronting 50 feet with a depth of 165 feet, and the lease provides for an annual rent of 5 per cent. on a valuation of $125,000 for the first ten years and 5 per cent. on $150,000 for the second ten years. The lessee is to pay the usual rate on the cost of the building and in addition the taxes and insurance. The Goodyear Tire and Rubber Co. has also purchased the Ford-Johnson warehouse at Indiana avenue and the Illinois Central tracks for $95,000. This concern's Chicago business in the future will be centralized in this locality.

* * *

Dealers who carry a large line of garden hose are now preparing for the opening of the spring trade. To date a number of the larger houses have orders that have reached them much earlier than anticipated, and this situation is taken as an indication that the spring trade will open earlier than last year and will also be much heavier.

* * *

Two meetings of particular interest to the rubber industry were held in Chicago recently. The Friction Plug Heel Association held a meeting that was attended by a number of men from various parts of the country who are well known to the rubber trade. Among those who were here were Mr. Pitcher of the Pitcher Rubber Co., Boston, and Mr. Platt of the Foster Rubber Co., Boston. The second meeting was that of the Finders' Association, which is composed of the shoe jobbing interests of Chicago. This meeting was held at the La Salle Hotel and was one of the most largely attended in the history of the organization. Many from out of town attended this meeting. Various matters of vital importance to the association were discussed.

THE RUBBER TRADE IN CINCINNATI.

By a Resident Correspondent.

THERE has been a healthy volume of business transacted by the local tire houses during the first two months of this year, and orders from traveling salesmen and mail orders have made the rubber trade quite active locally. There has been no falling off in the demand for rubber footwear, despite the fact that in this section there has been an open winter with weather conditions unfavorable to creating a demand for rubber clothing and footwear.

* * *

W. G. Brown, the executive head of the W. G. Brown & Co., rubber brokers of this city, was tendered a complimentary dinner at the Business Men's Club in recognition of his past services as chairman of the Santa Clause committee. For several years past Mr. Brown has been one of the stanchest supporters of the movement, and its success was largely due to his untiring efforts.

* * *

The Ideal Steel Wheel Co. has secured title to a valuable man-

ufacturing site, which was practically purchased last November, mention being made in this column at the time. The company will be in full operation as soon as special machinery which is being built is installed. The product to be manufactured by the company is a patented steel wheel which makes possible the use of a puncture-proof cushion tire at all speeds.

* * *

While the agreement entered into by the rubber tire manufacturers of the country prohibits exhibits of their products at the automobile shows given outside of the cities of New York, Chicago and Boston, several of the managers of the big companies maintaining branches in this city arranged to run side shows of their own at their respective branches during the Cincinnati Automobile Show, which opened February 24 and continues to March 5. Manager B. M. Lovell, of the B. F. Goodrich Co., has a display at the spacious quarters of that company on Race street in the form of a rear automobile system equipped with safety treads. A similar exhibit has been held in other parts of the country and always with marked interest to the public. The Firestone Tire and Rubber Co., The Diamond, The Fisk and The United States Tire companies are also making a special point to interest visitors to the show in their products.

* * *

The Seamless Rubber Co, represented locally by Bumiller & Remelin, dealers in automobile and bicycle accessories, golf balls and sporting goods, has a large display of its products at the Automobile Show. The display is unique for this city, as it shows the process of manufacture of rubber goods in their various forms, from crude rubber to the finished product.

* * *

The I. J. Cooper Rubber Co., at 717 Main street, has taken over the agency of the Motz Tire and Rubber Co., which was formerly held by the Selden Motor Co. The Cooper company also handles Racine tires.

* * *

Dr. C. L. Bonifield, president of the Cincinnati Automobile Club, and Gustav Drach, an architect, are the president and secretary of the National Cement and Rubber Co., which has its principal offices in Toledo, Ohio. The specialty of this company is a patented clamp by which any make of casing or inner tube may be cured of blow outs and punctures in five minutes.

* * *

The Fisk Rubber Co. has become a prominent factor in the local rubber field. It has recently opened a branch in this city at 816 Main street and placed M. J. Kirby in charge. The local branch will cover the Central states from this city.

* * *

Edward Barrett, who was formerly connected with the Federal Tire Co.'s branch at Columbus, Ohio, as assistant manager, has resigned and has taken a position with the Fisk Rubber Co. here.

* * *

John Barrett, the director-general of the Pan-American Union, and former United States Minister to Panama and other South American countries, in an address at the annual dinner of the Chamber of Commerce, urged Cincinnati business men to be awake to the trade possibilities which the Panama canal will develop. He advised them to make preparations to study the buying and selling field of all of the South American countries and canvass the trade conditions, in order that this city may not be outstripped in the race for commerce there. Declaring that he recognized the strategic position which this city occupies in the commerce of the United States and especially in the great Ohio and Mississippi valleys, the speaker said he wanted to see it awaking to the importance of the Panama canal and of Pan-American commerce. He laid particular stress upon the rubber-producing countries of South America and the importance of Cincinnati becoming one of the leading points of distribution of that product, in view of the fact that it has as its immediate neighbors some of the most important rubber manufacturing cities in the world. Mr. Barrett in speaking of the rubber trade possibilities in the South American countries said: "I urge upon the Cincinnati Chamber of Commerce, manufacturers, the business men, the exporters and importers to take a direct interest in what the Panama Canal actually means not only to Cincinnati, but to the entire country, and to study intimately the twenty sister republics of the Western hemisphere lying south of the United States. Nothing better could happen to Cincinnati than that you should start here what might be called a Panama Canal and Pan-American movement which would not only benefit this city, but expand all over the Ohio Valley and the Central West. 'Get ready for the Panama Canal, and go after Pan-American trade' should be the slogan of your Chamber of Commerce."

* * *

Local representatives of the manufacturers of anti-skid and non-skid tires are lending every possible encouragement to the movement started by city officials to follow New York in tabooing the use of tire chains on asphalt streets. With the increase in use of motor vehicles in this city it has been found that many of the more travelled thoroughfares, paved with asphalt, are rapidly becoming destroyed, it being claimed that the constant wear and friction of the steel edges of the chains cut into the asphalt. The agitation, however, is meeting with a storm of protest on the part of accessories dealers and auto owners who have invested in chains.

* * *

Recently the Schaefer Rubber Co. entered into a lease for its present quarters on East Fourth street for a term of years. After the lease was executed the owner decided to improve the premises by building a skyscraper, and it was necessary for this company to seek other quarters. As a result, and in order to accommodate the owner, it will be necessary for the Schaefer company to move twice before it will be permanently located again. The company will occupy temporary quarters at 418 Vine street until April, 1914, at which time it will again be located on East Fourth street.

THE RUBBER TRADE IN RHODE ISLAND.

By a Resident Correspondent.

WORKMEN have just finished their labors on the new storehouse for the Revere Rubber Co. in Providence, and the contractors are ready to turn the structure over to the company. The building is of modern construction and is connected with the main building of the plant by a bridge 150 feet long. It was erected as a result of the increasing business of the company. It is the second storehouse that the concern has erected during the past year. It is of reinforced concrete of flat slab construction, no beams or girders being used to support the floors. The size is 75 feet by 300 feet. The five floors give a floor area of more than 100,000 square feet. The floors are designed for a live load of 250 pounds per square foot. Brick curtain walls enclose the building, while each floor is divided into three rooms by terra-cotta fire walls provided with automatic fire doors. All the concrete is reinforced with Havemeyer deformed steel bars, and steel sash and wire glass are used in all the windows. The roof is of concrete slab, with tar and gravel roofing. This building was erected for the storage of raw materials and manufactured goods. As soon as the building is occupied the space now used for storage will be available for manufacturing purposes, and this, together with other extensions and improvements, will provide for about 50 per cent. increase in the production of tires.

* * *

Judge LeBaron B. Colt, who on January 21 was elected United States Senator from Rhode Island by the General Assembly, mailed to President Taft on February 3 his resignation as United States Circuit Judge from the First Judicial Circuit. The resig-

nation took effect Saturday, February 8. Judge Colt has served in the United States courts since March, 1881, when he was appointed District Judge for Rhode Island by President Garfield. His term of service in the Federal courts was for a period of more than 30 years.

On the day that Judge Colt sent in his resignation, February 3, Col. Samuel Pomeroy Colt, head of the National India Rubber Co. of Bristol, and president of the United States Rubber Co., gave a dinner at the Squantum Club, Squantum, to the members of the General Assembly, State officials and prominent citizens of Rhode Island in honor of his brother, Judge Colt. About 100 guests were present. Following the dinner addresses were made by Col. Colt, Governor Aram J. Pothier, Lieutenant Governor Roswell B. Burchard, Albert B. West, Democratic leader of the House of Representatives, and Judge Colt.

* * *

Forty-seven years in the employ of the National India Rubber Co., Bristol, is the record of James H. Hoar, foreman of the Vulcanizing department of the factory, who recently celebrated his 66th birthday. Mr. Hoar is the oldest employe of the company in point of service. In all the 47 years of his service in the company, as laborer, assistant foreman and foreman, Mr. Hoar has not missed a day because of illness. He has held the position of foreman for 26 years.

JAMES H. HOAR.

When a young man Mr. Hoar was associated as a gardener with his father. In the autumn of 1866 when the factory of the National India Rubber Co., then the National Rubber Co., had been in operation but a year, Mr. Hoar gave up his position with his father and entered the employ of Bristol's new industry. For several years he worked at varnishing and curing of rubber goods, until he had acquired a thorough knowledge of his trade. It was while Stephen Bourn, a former well-known rubber man, was foreman of the department that Mr. Hoar was made assistant foreman. This was in 1877. In 1887 Mr. Bourn retired and Mr. Hoar succeeded him.

Mr. Hoar has 40 men under him today in the vulcanizing department. This department is one of the most important of the many in the big Bristol factory. The product of the mill—boots, shoes, arctics, carriage cloth and many other articles of every-day use—have to pass through "the heats" before being ready for the market. It is here that Mr. Hoar's long training stands him in good stead, for it requires skill and knowledge of the rubber business to determine when the goods are vulcanized to the proper degree.

Mr. Hoar tells many interesting stories of the work in the rubber mill in the early days of the industry. "I used to work many hours overtime," said Mr. Hoar. "It was customary in those days when there was a rush to begin the day's work at 5 o'clock in the morning and keep it up without stopping, with the exception of when we went to our meals, until 11 or 12 o'clock at night. They don't do that nowadays," he added with a smile. He explains his ability to keep up this high tension by his habit of taking rest when he could, and by living a moderate life. "I never had a vacation," said Mr. Hoar, one day recently, "being content to enjoy freedom from work when the factory was closed for repairs or other causes." Although his work keeps him on his feet, Mr. Hoar says he feels no ill effects.

* * *

The factories of the National India Rubber Co. and the Consumers' Rubber Co., of Bristol, resumed operation February 3, the former after a shutdown of two days for repairs to a cylinder and the latter after about two weeks' cessation of work for repairs and improvement to the machinery.

* * *

Manager LeBaron C. Colt of the factory of the National India Rubber Co., of Bristol, left February 5 for Denver, Colorado, where he will spend some time resting. Mr. Colt has had a busy season and will remain in Colorado for two months or longer. He was accompanied by his family.

* * *

A new steam boiler was installed at the factory of the International Rubber Co. at West Barrington February 3. A new 350 horse-power engine will soon be set up in that mill. Because of the rush of business night work has been started at this plant.

* * *

The Woonsocket Rubber Co. had a booth at the Arts and Crafts exhibit at the Baptist Church, Woonsocket, on the evenings of February 4 and 5. The booth was one of the most interesting in the whole exhibit. A rubber "ham" from South America was on exhibition and was examined with great interest by those present. Other articles displayed at the booth were other samples of crude rubber, and the finished rubber boots and shoes. This was the first exhibit of its kind ever held in Woonsocket. The manufacturers of the city plan another large one soon in some local hall, so that residents in Woonsocket may learn of the various articles manufactured in the city.

* * *

The annual meeting of the American Wringer Co. was held January 31 at 75 Westminster street, Providence. The following were elected directors: W. S. Granger, Lyman A. Mills, W. S. Ballou, A. G. Beardsley, Jr., J. F. Hemenway, Dr. James E. Sullivan, and Latimer W. Ballou. At a meeting of the directors held immediately after the adjournment of the stockholders' meeting, W. S. Ballou was elected president, and A. G. Beardsley, Jr., was elected treasurer.

* * *

Marcus L. Carder has filed suit for $10,000 against the American Electrical Works of Phillipsdale, manufacturers of wire insulating, alleging that a stroke of paralysis that he suffered on May 20 of last year was due to the poisonous fumes arising from the burning of arsenic, in which the defendant company forced him to work.

* * *

Frank Salisbury, for a number of years employed at the factory of the National India Rubber Co., died February 7 at his home in Bristol, after an illness of several months. He had been a sufferer from tuberculosis. He was a native of Bristol, and was 27 years old.

* * *

Arthur L. Kelley, president of the Mechanical Fabric Co., makers of rubber goods, and president of the Narragansett Elec-

tric Lighting Co. of Providence, was recently operated upon for appendicitis in a Boston hospital. Mr. Kelley has been in poor health for some time, although he has shown considerable improvement since the operation.

* * *

Francis Munro, a veteran of the Civil War and for years an employe of the National India Rubber Co., of Bristol, died at his home in Bristol February 11, after a few days' illness, of heart trouble. He was 73 years old. After serving in the War of the Rebellion Mr. Munro returned to Bristol, where he obtained a position with the National India Rubber Co. He was a machinery belt maker in that plant for about 30 years, until he retired several years ago, owing to ill health.

* * *

Considerable interest has been awakened among the employes of the Consumers' Rubber Co. in Bristol this winter over the work of the basketball team, which is composed of men from the plant. On February 8 the team defeated the second team of the Bristol Naval Reserves by a score of 16 to 8. The officers of the company are also taking an interest in the sport, and are encouraging the employes in their loyalty to the team.

THE RUBBER TRADE IN TRENTON.

By a Resident Correspondent.

LOCAL manufacturers of mechanical rubber goods, hard rubber, automobile tires and sundries are much concerned regarding the attitude of labor in this city, and to judge from the activity of labor organizers of the American Federation of Labor a general strike of workmen in the local plants is a possibility of the near future. For weeks the labor organizers have been working quietly among the more skilled men of the rubber industry, and their efforts to form a union and have the operatives affiliate with the A. F. L. appear to be bearing fruit.

The labor leaders have already organized the operatives employed in the manufacture of hard rubber, and the employees of several other rubber companies in this city and in Morrisville, across the river from this city, have formed a union and applied to the Federation for a charter. Delegates have been named to the Central Labor Union, a county organization affecting practically all skilled labor in this section of the State. About 400 men are employed in the hard rubber branch of the rubber industry in this section.

The labor organizers are holding meetings every Sunday for the organizing of the rubber workers, a state of affairs which naturally is not viewed with any great favor by the manufacturers.

The memory of the strike of the rubber workers of this city in the winter of 1904 is still fresh in the minds of the manufacturers, the majority of whom are not anxious to go again through such an experience. In this strike, conditions become so bad that the strikers were indicted by the county grand jury and some sent to prison for assaults on men who replaced the strikers in the plant of the United and Globe Rubber Co., Home Rubber and one or two other places. It was a long, drawn-out battle, marked by fierce fighting on the part of the strikers, but at the finish they were glad to go back to work. The strike leaders were unable to secure employment in any of the plants.

* * *

The Industrial Workers of the World members are taking an active part in the rubber strike, and also in the strike of artisans and operatives in other industries in the city. There are now six different strikes on in the city, and business has become affected to such an extent that the merchants and tradespeople in general have appealed to the Chamber of Commerce to settle the strikes. In the John A. Roebling's Son's mills several thousand employes are on strike with no immediate chances of a compromise.

General C. Edward Murray, treasurer of the Crescent Belting and Packing Co., in discussing the strike situation said: "After my experience in the general rubber workers' strike in 1904, which it will be remembered ended with a tremendous loss for both sides, I feel that everything should be done to arrive at some definite conclusion without the necessity of either side losing anything. I find, submitted by a committee of employes, a statement containing a list of advances desired, and it is such as would indicate that the committee has given very little thought or possessed little knowledge of the earnings of the different employes; for example, we have 43 girls employed on our braider machines and spoolers. With an idea of making it possible for them to earn more money without additional labor, two or three weeks ago we increased the speed of our machines, and also made some changes to our take-offs which increased the daily capacity of the machines while in operation, with the result that 26 of the 43 girls averaged 49 hours and received 12.7 cents per hour, which would equal for a week of 55 hours $6.98, while the amount asked for by the committee is 12½ cents per hour, or $6.88 for the week.

"The management of the Crescent Belting and Packing Co. hasn't any objection to organized labor, or to treating with any committee representing their employes, but they feel that any difference should at least be discussed before strike action is taken, as was done in this case. It has been our policy to pay the maximum amount of wage paid by our competitors, which is all anyone can possibly do and compete successfully."

George R. Cook, of the Acme Rubber Co., and J. L. Lambert, also an officer of the concern, declare that the strike of the men in that plant has not seriously hampered business.

* * *

President and General Manager of the Essex Rubber Co., C. H. Oakley, announced in the week of February 17 a 10 per cent. increase in the wages of all the employees of this rubber concern, a piece of news which was enthusiastically received by the 200 or more operatives. If a strike is declared it is hardly probable that this progressive concern will be affected, as the best of feeling exists between employers and men.

* * *

The Delion Tire and Rubber Co., Inc., of this city and New York, has contracted with Burton & Burton, builders of this city, for the erection of a three-story fireproof building on East State street, just outside the city boundary line. The building is to be modern in every particular and will be of steel construction, with reinforced concrete floors and other material calculated to make it fireproof. The work of construction was started February 19, and the contract calls for the completion of the building by May 1, when the manufacture of high-grade automobile tires will commence. The company is to make a tire which it will guarantee for 5,000 miles' service. The building is to cost in the neighborhood of $60,000. Freeman & Halstead, of New York City, are the architects. R. S. Peale, of 111 Broadway, New York, is president of the corporation, and he has interested local capital in the enterprise. Some of the Trenton stockholders include: R. C. Manning, automobile dealer; I. Harper Clayton, contractor; Newton A. K. Bugbee, civil engineer and contractor, and Burton & Burton, contractors. Contracts for the new building have been filed in the office of the county clerk.

* * *

Thomas B. Holmes, Jr., who covered the States of Pennsylvania, Ohio and West Virginia for the Empire Rubber Co., has quit the rubber business and is traveling for a linoleum concern, the Turford Co., of this city.

* * *

The M. & M. Tire Co., with offices at 214 East State street, was incorporated in this county a fortnight ago with a capitalization of $150,000. Seventy-five thousand shares of common stock are placed at $1 a share, and 7,500 shares of preferred

shares are held at $10 a share. The incorporators named are: William McGinnis, of this city; William Morgan, of Ewing, and A. Trapp, of Trenton. Mr. McGinnis is named as the president of the concern.

THE RUBBER TRADE IN SAN FRANCISCO.

(By a Resident Correspondent.)

CALIFORNIA has suffered considerable loss as a result of the material damage to the orange crops in the southern part of the State. Such a loss is felt by nearly every industry. The rubber industry has felt it through certain lumber mills and box factories which supply the lumber and boxes for the oranges. A sufficient number of orders have been cancelled for boxes to affect such mills and factories to such an extent that they will not order rubber belting this year. In other respects the State has shown great growth and increase of commercial activity, and the improvements which are being made in and about San Francisco, in preparation for the 1915 fair, certify to the big increase which business of this city is to receive.

* * *

Mr. Nat. Dodge, of the Western Belting & Hose Co., on Mission street, has taken an interest in the American Rubber Manufacturing Co. The death of Mr. Griffiths, whose guiding hand had done much to bring the business of the concern to a high state of success, made it necessary to secure some one who would assist in maintaining the high standard which Mr. Griffiths had set. The business of the company, which has many important eastern connections, will continue as before.

* * *

The Panama Rubber Co. has been organized for the purpose of making automobile and motor tires in a factory to be erected in or near San Francisco. The new company, when the incorporation is fully perfected will have a capital stock of $1,000,000, and the men connected with the enterprise are prominently associated with big automobile and extensive financial enterprises on this coast. W. D. Newerf, one of the best known rubber tire merchants in the West, has been the prime mover in the new plan, and will have an important connection with the company. Mr. Newerf is at present coast distributor for the Miller tires. The exact location of the big factory has not been determined upon, but it will be either in San Francisco or in one of the cities close by on the bay, and as soon as the site is selected the work of erecting one of the most thoroughly equipped tire plants of the country will be rushed to completion. This western territory has been a wonderful field for the sale of tires, and a big factory located here can hardly fail to succeed.

* * *

A new concern known as the Acme Rubber Co. has opened an establishment on Golden Gate avenue, near Van Ness. Considerable machinery has been installed. The rubber used, however, is artificial, being a substance derived by a patented process of a local inventor. Mr. Schwartz, who was formerly with the Plant Rubber & Supply Co., has become associated with the new company.

* * *

Some big houses are wondering why it should be necessary to have automobile shops and tire shops out on Golden Gate avenue, strictly in the residence district. This of course was natural after the fire of 1906, when business of all kinds located there, but now all business has moved down to the regular business quarters except the automobile shops and tire shops. The big dealers have moved down, but they still maintain branch stores there, which doubles their expense. Setting a suitable example, the Gorham-Revere Rubber Co. has closed its Van Ness avenue and its Oakland tire branch, and has moved everything down to the factory on Freemont street.

W. L. Eaton, with the New York Belting & Rubber Co., has returned from a recent trip to Honolulu in the interests of the firm.

* * *

N. Lincoln Green, of the United States Rubber Co., has been a recent visitor in San Francisco.

* * *

E. J. Day & Co., of Oakland, an old established automobile supply firm have just completed arrangements with the Federal Rubber Manufacturing Co. to distribute Federal tires in Alameda and Contra Costa counties. Day & Co. are making extensive alterations in their present store in order to accommodate a large stock of Federal tires, and in connection with the tires a service department will be maintained, so that automobilists will get the same service for repairs as from a direct factory branch. H. V. Overington, who has been with the Diamond Rubber Co., as manager of their Oakland branch, has accepted a position with Day & Co., to take charge of their new tire department.

* * *

Frank E. Carroll, manager of the San Francisco branch of the Goodyear Tire & Rubber Co., held in February the first of a series of monthly conferences with the employes selected from all of the branch stores.

* * *

The Plant Rubber & Supply Co., of this city, has recently bought out the stock and business of the Magnesia Asbestos Co., a concern of this city.

* * *

Mr. Oliver, formerly superintendent of the American Rubber Manufacturing Co., and now proprietor of a factory of his own on Telegraph avenue in Oakland, is enjoying a big business on his specialty of inner tubes for automobile tires.

NO OFF AUTO SEASON THIS YEAR.

Unfortunately all rubber manufacturers cannot be equally happy at the same time. When the ground is covered two feet deep with snow the footwear makers are in a most contented state of mind, while the tire makers begrudge every day that the snow remains on the ground. This past winter the makers of boots and shoes have had considerable ground for complaint—one might say, bare ground for complaint—while the tire makers have looked upon it as their lucky year. Owing to the open character of the winter and the meager fall of snow thousands of autos have remained in commission which ordinarily would have remained in the garage.

This naturally has made an appreciable difference in the demand for tires. Sales manager J. D. Anderson, of the United States Tire Co., recently made the following statement: "From a sales standpoint this is proving by all odds the best winter I have ever known in the industry. And the logical explanation for this fact is that owners owing to good weather, have deferred laying up their cars until it commences to look as though they would keep them in operation straight through the winter months. Our factories all have been running night and day, still we haven't been able to keep so very far ahead of our orders. This winter has proved conclusively that the motor car is now distinctly a year round utility."

A RUBBER PLANT AT LOS ANGELES.

Los Angeles, California, is to have a rubber factory for the manufacture of tires, belting, hose and other kinds of rubber goods. The company back of this enterprise is the W. C. Hendrie Rubber Co., of Denver, Colorado. Its operations have hitherto been confined to Denver, where it has been simply a distributing concern, handling the various articles manufactured by the Republic Rubber Co., of Youngstown, Ohio. It purposes now to go into the manufacturing line, and will erect a $100,000 factory in Torrance, in the suburbs of Los Angeles.

News of the American Rubber Trade.

THE APSLEY RUBBER CO. INCREASES ITS CAPITAL.

THE Apsley Rubber Co. increased its capital in February from $750,000 to $1,000,000 by adding $50,000 to its common stock and $200,000 to its preferred stock, bringing each of these stocks to a full issue of $500,000.

Both are 7 per cent. stocks which have never failed to earn and pay their dividend. The stock has been selling in the open market at $114 whenever it appeared upon the market, which has been very seldom. The present stockholders have been given the right to subscribe to this new issue of stock at par, and we learn that the rights, where anyone wished to dispose of them, are selling at $5.00 and $6.00 premium. The date of subscription and the date of payment both expired February 25.

The Apsley Rubber Co. did the largest business last year they have ever done; and notwithstanding the open winter, they are now ahead of last year at the same date. They are putting in some new heavy machinery, which they have bought of the Farrel Foundry & Machine Co., which is now being installed, for the purpose of making heavy rubber clothing.

THE FISK CO. INCREASES ITS CAPITAL STOCK.

The Fisk Rubber Co., of Chicopee Falls, Massachusetts, has issued $3,000,000 additional in 7 per cent. first preferred stock. The new authorized capital is $15,000,000, of which $5,000,000 is first preferred, $2,000,000 second preferred, convertible and common, and $8,000,000 common. The directors of the enlarged company will include H. T. Dunn, H. G. Fisk, J. C. Cole, R. B. McGraw and G. A. Luddington. The officers will be as follows: President, Mr. Dunn; treasurer, Mr. Fisk; vice-president, Mr. Cole, secretary, Mr. McGraw.

The Fisk company is in need of increased factory facilities, although the capacity of the plant has been increased 40 per cent. during the past year and the factory has been in operation day and night. Since 1908 the output of automobile casings or shoes has increased from 57,695 to 221,826; of inner tubes from 40,960 to 198,925, and of bicycle tires from 84,387 to 240,623. The company is now manufacturing 1,300 automobile tires a day, and expects through the use of the new buildings now under construction to increase this to 1,800 a day.

AMERICAN TIRE COMPANY INCREASES CAPITAL.

At the recent annual meeting of the American Tire and Rubber Company of Akron, Ohio, the following new directorate was elected: Adam Duncan, Charles F. Fosnight, F. L. Kryder, Gus Sieberling, C. M. Wertz, G. C. Waltz, F. M. Lapp, Frank Pfeiffer and James Shaw.

In the subsequent election of officials, Adam Duncan was chosen as president and treasurer, but from the pressure of business, declined to serve in the latter capacity, Frank Pfeiffer being thereupon elected treasurer. G. C. Waltz was chosen vice-president and F. E. Rowe, secretary and assistant treasurer.

The first business undertaken by the new board of directors was the increase of the capital of the company from $200,000 to $500,000. It is not, however, intended to issue at the present time more than $50,000 of the new stock. A new solid tire is being perfected by the company, which will soon be placed on the market. Patents for the new tire will shortly be issued.

FIRESTONE GETS BIG TIRE ORDER.

An order for 200,000 tires is said to have been booked by the Firestone Tire and Rubber Co., Akron, from the Ford Motor Co. of Detroit. The order represents over $2,000,000.

The Seamless Rubber Co. of New Haven has filed a certificate of issue of five thousand additional shares of capital stock, making the outstanding stock $500,000 of common stock and $500,000 of preferred stock.

THE CINCINNATI RUBBER MANUFACTURING CO.

The annual meeting of the stock holders of this company was held February 11. The old board of directors consisting of Casper H. Rowe, J. A. Green, S. E. Hilles, George McG. Morris and J. M. Crawford was re-elected, and the following officers were chosen for 1913: S. D. Baldwin, president; Fred A. Geier, vice-president; F. D. Scherl, secretary and treasurer, and A. D. Rogers, sales manager. The results of the company's operations for 1912 were very satisfactory, and during the present year substantial improvements and additions will be made to the company's plant.

CHICAGO RUBBER CLOTHING CO.

At the recent annual meeting of the stockholders of the Chicago Rubber Clothing Co., Racine, Wisconsin, the same board of directors was re-elected, and the following officers were also re-elected: Honorable Charles H. Lee, president; E. V. Laughton, treasurer, and George G. Bryant, secretary and general manager.

THE M'GRAW OFFICERS AND DIRECTORS.

The McGraw Tire & Rubber Co., East Palestine, Ohio, at the meeting recently held, elected the following officers and directors:

Officers—E. C. McGraw, president; R. W. McGraw, vice-president; R. B. Taggart, treasurer, and L. M. Kyes, secretary.

The following were elected directors—E. C. McGraw, Mrs. E. C. McGraw, R. W. McGraw, John Morgan, L. M. Kyes, R. F. Taggart, R. B. Taggart, J. C. Chamberlin, C. L. Merwin, H. C. Fraser, Geo. Flaccus, J. C. Chaplin, J. S. Wilson, F. H. Rea and C. H. Bolton.

The report of the company shows that $1,160,000 worth of automobile tires were manufactured and sold by the company in the year 1912. The company hopes to double its output during 1913.

RECOVERING UNCURED FRICTION SCRAP.

The Acushnet Process Co. has been trying some experiments in the recovering of uncured friction scrap, in which they have been very successful. Their process differs radically from those commonly used, and is more costly to operate, but the rubber obtained is said to be entirely free from any effects of vulcanization, which allows it to be put to more uses.

The Acushnet Co. has recently produced a rubber which it claims possesses the characteristics of guayule, and which is said to be already in active request. The Acushnet Co. has devoted a great deal of time and thought to the development of this new product, which seems likely to prove very popular. The new rubber is soft and capable of absorbing a large amount of compound, cures quickly and is sold washed and dried. The company is prepared to furnish samples, crude and vulcanized, and to quote attractive prices, and also to guarantee deliveries as per specifications.

TRUE—AS FAR AS IT WENT.

The February issue of THE INDIA RUBBER WORLD had a paragraph to the effect that the Air-Brake Department of the Republic Rubber Co., made a record on January 7, in producing short length hose—turning out on that day 11,500 feet. This was quite true as far as it went, but it was too modest a statement. The paragraph should have read 11,500 pieces instead of feet; and as each piece was 22 inches long, the record for the factory on that particular day was 21,083 feet of air-brake hose—very nearly four miles. The company believes that this is the record for one day, and as far as there is any information available at the present time, the company appears to be right in its belief.

AN ORDER FOR 20,000 FEET OF FIRE HOSE.

The city of Montreal, Canada, invited tenders early in February for supply of 20,000 feet of 2½-inch cotton, rubber-lined fire hose, for use by the Fire Department in that city.

Bids were offered by various Canadian companies. After considerable investigation and delay the city finally placed the order with the Canadian Consolidated Rubber Co., Ltd., Montreal, for 20,000 feet of 2½-inch wax and gum-treated "Keystone" fire hose at $1.10 per foot coupled. The company was represented in this transaction by Mr. J. M. S. Carroll, district manager.

When this large order has been delivered the city of Montreal will have in use over 90,000 feet of "Keystone" brand fire hose.

A PATENT FOR A PROCESS FOR PRESERVING EXTRACTED RUBBER.

Mr. H. O. Chute, of New York, has been granted patent No. 1,051,987, dated February 4, 1913, for a process of preserving extracted rubber by washing with pyroligneous products or the liquid of wood distillation. It is claimed that while it is well known that Pará rubber is treated with smoke from palm nuts, it is new to treat a deresinated rubber with the liquid products of wood distillation, and that this process preserves the rubber and prevents it from softening and running. The claims cover the process of extracting the resins, and then treating the rubber with the liquid, the product consisting of extracted rubber having incorporated the products of wood distillation. Specifically, deresinated Pontianak rubber impregnated with pyroligneous acid is claimed as a new product.

DIVIDENDS PAID BY RUBBER COMPANIES.

The B. F. Goodrich Co. paid on February 15 a quarterly dividend of 1 per cent. on its common stock to stockholders of record on February 5.

The B. F. Goodrich Co. reported February 24 for the nine months ending on December 31, 1912, net profits from operations of $3,719,334. Other income amounted to $571,844. The surplus after paying preferred and common dividends amounted to $806,235.

The Hood Rubber Co. paid on February 11 a quarterly dividend of 1¾ per cent. on its preferred stock to stockholders of record on January 31.

The Manufactured Rubber Co. pays on March 1 a quarterly dividend of 1¾ per cent. on its preferred stock to stockholders of record on February 24.

SAVINGS BANK LIFE INSURANCE IN RUBBER COMPANIES.

MASSACHUSETTS Savings Bank Life Insurance now has more than 7,000 policyholders with insurance in force to the amount of $2,700,000. Two hundred agencies have been established by manufacturers and at these agencies premiums are collected from the pay envelopes of the employees, and once a month transmitted to the insurance departments of the banks. The Tyer Rubber Co., Andover; Hood Rubber Co., Watertown; American Rubber Co., Cambridge; and the Boston Woven Hose & Rubber Co., Cambridge, have agencies and many policies are in force among their employees. An agency has recently been established at the Revere Rubber Co., Chelsea. Massachusetts Savings Bank Life Insurance affords an opportunity for the employer to give his employees the advantages of insurance at a low cost.

THE TUXEDO TIRE CO., INC.

The Tuxedo Tire Co., Inc., the incorporation of which was recently announced, has taken over the business of the Tuxedo Tire Exchange, Bronx, New York. It states that it is open to consider good selling propositions from makers of automobile accessories. Mr. Hugo Liedtke has recently visited the South, on the lookout for new selling ideas.

A BOSTON OFFICE FOR THE LOEWENTHAL CO.

The Loewenthal Co., of New York, announced on February 20 the opening of a Boston office in order to insure better service for the company's New England customers. This office will be in charge of Mr. George Friedman.

A STATEMENT FROM THE N. Y. COMMERCIAL CO.

Referring to the announcement made February 17—received everywhere in the trade with much regret—of the appointment of a receiver for the New York Commercial Co., the company issued the following statement:

"We deeply regret to announce to you that we have felt it in the interest of all our creditors to consent to a receivership, not on the ground of insolvency, but for the purpose of preserving our assets for the equal benefit of our creditors and, after them, of our stockholders.

"This immediate step was necessary on account of large payments falling due next week which we could not, and in all fairness ought not, to pay, in view of certain banking facilities which we had heretofore enjoyed having been suddenly withdrawn.

"Immediately that the receiver is able to make up a statement of the company we propose to call a meeting of all the creditors for the purpose of showing them that our assets exceed our liabilities, and of determining what further action they may require."

Judge Seabury of the Supreme Court appointed John Z. Low, Jr., receiver for the company's property in New York, Pennsylvania and Virginia, on the application of James N. Taylor, attorney for A. H. Alden & Co., Ltd., of London. A receiver was appointed at Norfolk, Virginia, February 13, as it is a Virginia corporation.

This receivership in New York made it necessary for the firm of Geo. A. Alden & Co., of Boston, to consider what action it should take to protect the interest of its creditors, and after considering various possible courses, it decided that the most satisfactory action to take in the interest of all concerned would be to make an assignment which was done on February 17.

The assignees are: Mr. Archibald Blanchard, of the firm of W. O. Gay & Co.; Arthur H. Brooks, of the law firm of Myers & Brooks, both of Boston, and William L. Wadleigh, a commission merchant of Boston who is familiar with the rubber business. A public accountant has already been placed upon the books and a report of the firm's financial condition will be made at an early meeting of the creditors. Efforts are being made to accomplish a reorganization in order that the business in which the firm has been so long engaged may be continued.

Arrangement have been made by the Standard Asphalt and Rubber Co., 137 La Salle street, Chicago, to carry stocks of the material widely known as Alden's "M. R. X." These stocks will be carried in Chicago, Boston and Trenton, as well as in Liverpool, Hamburg and Paris, and rubber manufacturers may be supplied by sending to any of these addresses, or by writing to Mr. Geo. Watkinson, who has temporary quarters in the Alden offices at 77 Summer street, Boston.

AN AMERICAN FACTORY IN RIO DE JANEIRO.

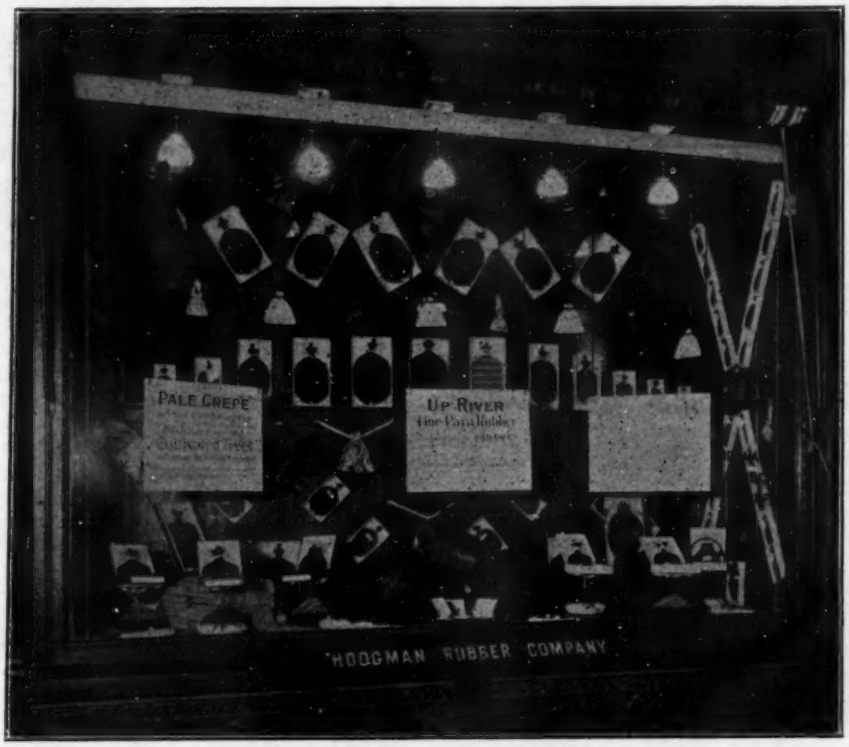
IN the December issue of THE INDIA RUBBER WORLD there was a paragraph referring to the fact that the Goodyear Tire and Rubber Co., of South America, had just been incorporated under the laws of Maine, with a capital stock of $3,000,000, for the purpose of operating rubber plantations and manufacturing rubber in South America. It was stated at that time that representatives of the company were in Brazil investigating the field.

Reports received within the last few days from Rio de Janeiro state that the representatives of the Goodyear company have met with much encouragement in their plans for a rubber factory in that city, and that the establishment of such a factory there is one of the probabilities of the near future.

A FINE RUBBER WINDOW ON BROADWAY.

The Rubber Exposition which was held in New York last Fall naturally excited a great deal of interest in the rubber industry, not only among those who visited the exhibition, but among the hundreds of thousands who read more or less about it in the daily print. One large manufacturing concern, at least, seized upon this general awakening of interest to give the public some further information regarding the industry. The Hodgman Rubber Co., at its large New York store on Broadway just North of Eleventh street, devoted one of its spacious display windows for several weeks preceding and during the holidays to an educational rubber display. As the window is 20 feet wide and 12 or 15 feet high, it gave ample opportunity for a creditable exhibit.

In the center of the window there were two large balls of Pará rubber which had previously been displayed at the exhibition, while at either side there was an exhibit of plantation rubber. These exhibits were described on large placards hanging immediately over them, which told what sort of rubber they were, and where they came from. In the background, and filling the rest of the window, were a great many manufactured articles made by the company, including their famous hot-water bottles and numerous rubber cushions, rings and bags—many of them covered with silk in attractive patterns. The window told at a glance the story of rubber from the crude product of the tree to the most finished product of the factory; and as the display was in the very heart of the down-town shopping district, it is safe to say that 100,000 people, probably more, stopped to look in this window and went away with a much more intelligent idea of what rubber is, and the uses to which it can be put, than they ever had before.



THE HODGMAN EDUCATIONAL RUBBER DISPLAY.

INDICTMENTS QUASHED.

Judge Dodge in the United States District Court in Boston, on February 6, quashed the indictment against Warren B. Wheeler, Stillman B. Shaw and G. Alden Wittemore, who were connected with Wheeler & Shaw, Inc., charging them with using the mails in a scheme to defraud in connection with the sale of stock of the North American Rubber Company.

The court held that the averments in the indictment, while they set up a scheme to deceive, do not show a scheme to defraud, and as it is only the latter that is prohibited by statute, no criminal offense was charged.

It is stated, however, that the government will seek a re-indictment.

THE FISK CO.'S NEW STOREHOUSE.

The Fisk Rubber Co., of Chicopee Falls, Mass., recently awarded the contract for the erection of a storehouse 240 feet long by 90 feet wide. The building will cost about $400,000 and will, when completed, add approximately 385,000 square feet to the present floor area of the concern, or nearly double the present area. The building will be located parallel to the tracks of the Boston & Maine Railroad and will be three stories high.

This company has just opened at Winnipeg a completely equipped branch house where it will carry a full line of Fisk tires.

THE HARMER RUBBER RECLAIMING WORKS RESUME.

THE Harmer Rubber Reclaiming Works, of East Millstone, New Jersey, will resume operation on or before March 10.

On October 28, 1912, a fire, which started in the drying room destroyed practically their entire plant. The plant that was destroyed has been replaced by a number of fine fireproof buildings, the three largest being 105 by 140 feet, 60 by 140 and 30 by 76. In addition there are a number of smaller buildings.

The company will have an 800-horsepower plant equipped with new engines, and with the latest type rubber machinery, thus enabling them to double their former capacity. Their shipping facilities by both water and rail are good, as they have the Delaware and Raritan canal and the Pennsylvania Railroad siding.

Business will be resumed with orders booked ahead, and it is expected that a night shift will have to be added in order to make quick deliveries to their customers, who have patiently waited during the course of reconstruction. Recently, Mr. Marcus called on the Eastern trade and found all their customers pleased to see him again ready for business. At a recent meeting of the company, Mr. Laurie, president, and Mr. Marcus, secretary and treasurer, were re-elected for the ensuing year.

This company makes a special brand for supplying the insulating wire trade. It also has installed a separate department for the making of White Shoddy exclusively.

I. W. W. AFTER RUBBER RECRUITS.

The organization known as The Industrial Workers of the World, and generally referred to simply as "The I. W. W.," has been extremely active during the last month among the rubber and waterproof garment makers in Massachusetts, seeking to enroll them among its membership.

PERSONAL MENTION.

Mr. James H. Stedman, treasurer of the Monatiquot Rubber Works Co., accompanied by Mrs. Stedman, is enjoying a four weeks' sojourn at Hampton Terrace, Augusta, Georgia.

Mr. John M. Miller, Jr., the popular manager of the Goodyear Rubber Co., St. Louis, has recently returned from his annual visit to New York, and reports business for the past year very good and prospects for 1913 promising.

Alexander Adamson, of the Adamson Machine Co., Akron, Ohio, is spending a well-earned vacation in Florida.

L. M. Franklin, formerly with the Knight Tire and Rubber Co., Akron, Ohio, is now one of the Goodyear Tire and Rubber Co.'s Boston sales force.

Mr. P. W. Koebig, dealer in packing and rubber goods, moved his office on February 10, from 150 Nassau street to 116 Broad street, New York.

MR. I. R. BAILEY GOES TO THE GOODYEAR CO.

After an association of ten years with the Diamond Rubber Co., Mr. I. R. Bailey has joined the Goodyear Tire & Rubber Co., and will act as sales manager of the mechanical goods department. The company intends, beginning about the first of April next, to manufacture a complete line of mechanical goods, including belting, hose and packing.

The manufacturing department will be under the direction of William M. Metzler, who was for many years assistant general superintendent of the Diamond Rubber Co., and superintendent of the mechanical goods department.

WILL REPRESENT EASTERN PLANTERS IN NEW YORK.

A number of the Eastern planters have secured New York representation, and undoubtedly more desire it. A rubber man of excellent character and standing, still young, although he has had ten years' experience in inspecting and passing on crude rubber imports, wants to act as representative in New York for an Eastern planting company. This would appear to be a good opportunity for planters who want to do so to get in direct communication with the American market.

MESSRS. FROST ON A FLYING TRIP

We Americans rather pride ourselves on the rapidity with which we go through life. But evidently there are some Englishmen who are not so particularly dilatory. Messrs. Harvey and William Frost, of Harvey Frost & Co., Ltd., London, have recently paid the United States a flying trip. They landed from the Mauretania on Saturday, February 8, and embarked on the Baltic on Thursday, February 20. Taking out Sundays and Lincoln's Birthday they had eight working days. During that time they covered New York, Philadelphia, Washington, Buffalo and various points west of Buffalo.

Harvey Frost & Co. are known the world over for their repair equipments—particularly tire vulcanizers and repairers. They make all kinds, from large equipments for factory use, down to little $15 outfits with which the car owner can do his own repairing. It is stated that they own more patents on vulcanizing apparatus than any other concern in the world. They came to this country to look over the ground and learn what they could about the needs of the American trade. They met a great many people—particularly among tire manufacturers and dealers—absorbing much information and reciprocally imparted much.

If the Messrs. Frost were Americans we should call them hustlers, but being Englishmen we can only say that they are exceedingly energetic and enterprising men, and it is not at all surprising that their business, though established only nine years ago, has reached its present large proportions.

DATES ON TIRES.

According to reports, automobile tire manufacturers and others are scheduled to have another fight on their hands in New York, in connection with a proposed law requiring the placing of the date of manufacture on each tire produced.

TRADE NEWS NOTES.

The Century Rubber Manufacturing Co., of Plainfield, New Jersey, is making a fabric cord tire, for which there is an active request. This company has a completely equipped plant, including a well appointed laboratory, which might naturally be expected as the president, Dr. Harold Von der Linde, and the factory manager, Maurice L. Allard, are chemists of recognized efficiency.

The Baumann Rubber Co., of New Haven, Connecticut, has added to an already extensive product a line of high grade ice caps.

The Bay State Insulated Wire Co., of Hyde Park, Massachusetts, has recently completed its new laboratory, which is now one of the best in its particular line in that section. The company is preparing to make a fibre heel and sole which will be marketed under the name of Springwell Gum Fibre.

Terkelsen & Wennberg, 90 High street, Boston, are said to produce an excellent line of molds for rubber work. They are also making molds for composition or hard rubber substitute devices.

The Hoyt Rubber Co., of 58 Reed block, Boston, is making a line of footwear specialties, which are interesting the shoe manufacturing and retail trade.

C. J. Bailey & Co., of 22 Boylston street, Boston, are about to issue a new one-hundred-page catalogue, showing cuts and descriptive matter of the very extensive Bailey line, which will be sent to any address on application.

Ernest Jacoby, of 79 Milk street, Boston, is manufacturing a black and white substitute which has earned considerable reputation. The Jacoby factory is located in South Boston.

E. W. Furbush, manager of the Walpole Rubber Co., 185 Summer street, is one of Boston's busy rubber men. This company, in itself an important concern, controls several subsidiaries, all of which are working full capacity.

E. W. Graves, of Graves & Graves, of 95 Milk street, Boston, is the inventor of a complete line of rubber plantation tools and devices. Among the Graves' inventions are tapping knives, a latex cup and a unique type of ladder, all of which are highly esteemed by rubber growers.

The extensive plant of The Monatiquot Rubber Co., South Braintree, Massachusetts, is producing large quantities of the various brands of Indian-named rubbers made by this concern. The company's Boston manager is Merton A. Turner and its offices are located at 565 Atlantic avenue.

The Wellington Rubber Co., with factory located at Wellington (Medford), Massachusetts, and offices at 79 Milk street, Boston, are proofing for the trade.

The Hyde Park Rubber Co., proofers, now occupy the premises in Clarendon Hills, formerly occupied by The Atlantic Rubber Manufacturing Co., which is now operating in a new factory in Hyde Park proper.

The Dove Machine Co. is now occupying its new factory on Broadway, South Lawrence, Massachusetts. This concern, which specializes in various types of rubber machinery and devices, has a complete and up-to-date equipment, with ample facilities for extension, which is already among its early plans for the future. In addition to its rubber machinery business it has acquired the Ford automobile agency and in a very short time proposes to commence the manufacture of business trucks.

The Derby Rubber Co., Derby, Connecticut, now under the management of P. B. Price, a successful reclaimer, is producing what is known as "The Derby," a floating reclaimed rubber, which is giving remarkable results in the manufacture of hard rubber without the addition of any crude material to the compound. The Derby Co. is also making a high grade tire and tube stock as well as a wire-covering rubber, which is proving very satisfactory.

A FEW MORE CALENDARS.

Several calendars really worthy of mention were received too late in January to be included in the column devoted to such publications in our February issue.

Among those later calendars is a large and handsome one issued by The Republic Rubber Co., Youngstown, Ohio. The entire calendar is nearly 3 feet wide x 30 inches deep, and the essential feature of it, a handsome lithograph in ten or a dozen colors, is 30 inches wide x 20 inches deep. This shows an old farmer with his horse at the watering-trough. The two are gazing with much interest on a red touring car that has just whizzed by, leaving in the road the familiar tracks made by the Republic "Staggard" tread. The title of the picture is "It begins to look like we're back numbers, Billy." The picture is worth framing, and probably many of them will be.

De Lagotellerie, crude rubber importer, 24 Stone street, New York, has issued a wall calendar in bright colors, giving a half dozen half-tone pictures of rubber-shipping scenes in Brazil, and scenes on the New York docks where the rubber is received. The most useful feature of the calendar, however, is a map of the world, about 12 or 14 inches in width, which is a very convenient thing to have on the wall for reference.

The Eugene C. Lewis Co., bookbinders, 214 William street, New York, have distributed a very artistic little wall calendar, with a block pad devoting a leaf to each day of the year. This is mounted on a heavy card printed in gold and several shades of brown, the whole enclosed in a suitable cardboard box.

The Omo Mfg. Co., Middletown, Conn., makers of dress-shields, are also represented by a very tasteful calendar. It is intended for the wall, being about 16 inches long. It is printed in gold, black and gray on heavy cream-colored paper, which is mounted on gray cardboard and finished with a pearl-gray ribbon for hanging purposes.

H. F. Taintor Mfg. Co., makers of whiting, Paris white, chalk and China clay, have distributed a small desk calendar, each sheet showing the current month in figures of good size, while the preceding and succeeding months are shown in smaller figures at the sides.

A FINE LITTLE POCKET DIARY.

John Royle & Sons, Paterson, N. J., manufacturers of tubing machines, insulating machines and circular looms for the rubber trade, have distributed to their customers a very attractive little pocket diary, gilt-edged and leather covered. They explain the somewhat delayed appearance of this diary by the statement that an earlier edition was just about to be shipped when the publishing plant took fire and their whole edition was destroyed, making it necessary to print another. In the front and back of the diary there are several pages devoted to an interesting recital of what the company has done and is prepared to do. The following paragraph is taken from the story:

"Go over your equipment carefully. Find out what it costs to run each machine and what it gives you in return. Then look into Royle machines and see what an investment in better tools would pay in the way of annual returns. Financiers consider six per cent. a splendid return on an investment. We have built machines that paid the user nearly one thousand per cent. on the investment; and while we may not be able to do quite so well every time, we can do something for you well worth your while."

A DESK CALENDAR AND PAD COMBINED.

A convenient combination of calendar and writing pad has been received by the customers of Stanley Doggett, 11 Cliff street, New York, dealer in chemical colors and compounding ingredients for the rubber trade. The writing pad, which is of excellent paper, is attached to a heavy mount about 3½ by 8 inches in size. Over the pad there is a calendar having a card for each month, the cards being inserted in a leatherette case. While this calendar is attached to the same mount as the pad, by reason of a double fold, it can be pushed up to the head of the pad and kept in an upright position where it stands, at a convenient optical angle, and leaves the pad uncovered for use.

THE THEODORE HOFELLER PLAYING CARDS.

Theodore Hofeller & Co., of Buffalo, New York, dealers in old rubber, have favored their friends with a very attractive set of playing cards, the face of the cards being, of course, like those in general use, except that the joker shows a half-tone print of the large Hofeller factory. On the back the cards are printed in crimson and gold and display this text artistically arranged: Theodore Hofeller & Co., Buffalo, New York; largest Dealers in Old Rubber in the World. It is a souvenir that is bound to receive a cordial welcome.

TRADE NEWS NOTES.

The Rubber Tire Repair Co., located at 915 East 15th street, Kansas City Missouri, is acting as a distributing center for the Shawmut brand of tires and other rubber goods for the territory around Kansas City.

About 85 per cent. of the second preferred stock of United States Rubber Co. has been deposited for exchange into first preferred on the basis of three shares of first preferred for four of second preferred. This represents approximately 85,000 shares.

The Alling Rubber Co., having a chain of stores in a number of cities in New England, New Jersey and New York, will open a store in Binghamton, New York, about April 1, at 157 Washington street.

The directors of the Boston Woven Hose and Rubber Co., have declared a quarterly dividend of $3 per share on the common stock, payable March 15, 1913, to stockholders of record March 5, 1913.

The International Auto and Tire League of Buffalo has reorganized, and its present name is the Northland Rubber Co., Inc. It is capitalized for $2,000,000 and has just completed a factory costing $350,000 with a daily capacity of 1,000 tires. The company has approximately 8,000 stockholders to whom they supply tires at cost. The secretary and general manager of the company, Mr. W. J. Hayes, is well known in New York banking circles.

The Keystone Rubber Manufacturing Co., of Erie, Pennsylvania, manufactures the "Keystone No-Cement Patch" for use on inner tubes made of Pará rubber, requiring neither cement nor acid to apply. This patch, now being extensively used, is a distinct innovation which will doubtless appeal to automobilists. In addition to the patch "Keystone Imperial Reliners" and a general line of automobile accessories are among the varied output of this company, which is now making everything in rubber goods with the exception of heavy mechanicals. The Keystone Co. has made remarkable progress since its inception, and its present factory is commodious, well-stocked and thoroughly equipped.

The Vulcan Rubber Co., Erie, has recently commenced the manufacture of mechanical goods.

The Allen Machine Co., Erie, is a recently organized corporation, now making rubber machinery.

The Speedway Tire Co. is a new rubber manufacturing concern at Louisville. H. S. Luman, the president of the company, is also president of the Falls City Construction Co. The secretary is Dr. Fred. L. Kauntze, a prominent Louisville physician. The practical department will be under the charge of H. W. Green, formerly of the Shawmut Tire Co.

The mill and washer equipment for the Speedway Tire Co., Louisville, was supplied by the Turner, Vaughn & Taylor Co., Cuyahoga Falls, which has recently added much up-to-date equipment to its plant.

A new rubber manufacturing company is in early prospect at Alliance, Ohio. No name has as yet been selected.

NEW INCORPORATIONS.

Albion Raincoat Co., Inc., February 17, 1913; under the laws of New York; authorized capital, $5,000. Incorporators: Henry E. Sanson, 149 Vermilyea avenue, New York, Edward B. and David C. Helwitz—both of 303 Marlborough Road, Brooklyn, New York. Location of principal office, New York.

Amper Electric Co., Inc., February 21, 1913; under the laws of New York; authorized capital, $25,000. Incorporators: Theodore D. Robinson, 453 Willow street, Lockport, New York, Ernest W. Jones, 61 Highland avenue, Buffalo, New York, and Charles L. Nichols, 45 Main street, Lockport, New York. Location of principal office, Lockport, New York. To deal in automobiles, automobile locks and switches.

Brooklyn Rubber and Metal Co., Inc., February 21, 1913; under the laws of New York; authorized capital, $9,000. Incorporators: Allan A. Deutsch, 405 Graham avenue, Brooklyn, New York, Morris Reicken, 86 Jefferson street, Hoboken, New Jersey, and Julius Pepperman, 368 Hicks street, Brooklyn, New York. Location of principal office, Brooklyn, New York.

Define Raincoat Co., Inc., February 1, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Rubin Fine, 54 East 11th street, Isaac Merlub, 106 Hester street, and Joseph Eisenberg, 52 East 117th street—all of New York. Location of principal office, New York. To deal in raincoats and rubber apparel.

Empire Rubber and Tire Co., January 2, 1913; under the laws of New Jersey; authorized capital, $1,000,000. Incorporators: Charles H. Baker, C. Edward Murray, and J. Cornell Murray, all of Trenton, N. J. To manufacture and sell rubber hose, tires for automobiles, etc., and to manufacture and sell rubber goods of every kind.

Goodyear Apparel Co., Inc., February 19, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Samuel Rosenstein, 308 East 72nd street, Henry Pearlman, 1001 Faile street, Bronx, and Carmie A. Panaro, 70 East 106th street, all of New York. Location of principal office, New York. To deal in waterproof and other apparel.

Kenneth Kernan Co., Inc., January 30, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Kenneth and Henrietta Kernan, and Elizabeth Graf—both of 428 59th street, Brooklyn, New York. Location of principal office, New York: To manufacture and deal in artificial limbs, elastic bandages, etc.

Motor Cycle Tire Co., Inc., January 27, 1913; under the laws of New York; authorized capital, $10,000. Incorporators: Henry W. Torney, 65 Park avenue, New York; Earl E. Beyer, 454 Riverside Drive, New York, and J. E. Beyer, Rochester, Indiana. Location of principal office, New York.

No Shock Wheel Co., Inc., February 21, 1913; under the laws of New York; authorized capital, $400,000. Incorporators: J. W. Ebbs, Englewood Cliffs, New Jersey, R. H. Waddell, 220 Broadway, New York, and A. A. Kelley, Montclair, New Jersey. Location of principal office, New York. To deal in autos, tires, auto parts, etc.

Panama Rubber Co., December 9, 1912; under the laws of California; authorized capital, $1,000,000. Incorporators: W. H. Newerf, W. E. McClune and John F. Roe—all of Los Angeles, California. Location of principal office, Los Angeles, California To manufacture automobile tires and all kinds of rubber goods.

Puncture Cure Sales Co., February 11, 1913; under the laws of New Jersey; authorized capital, $50,000. Incorporators: Frances B. Stewart, Howard F. Kirk and Charles H. Stewart—all of Newark, New Jersey. To acquire or purchase patents covering the manufacture of any device, substance or material to be used in the repair of automobile tires, etc.

Rex Tailored Raincoat Co., February 15, 1913; under the laws of New York; authorized capital, $900. Incorporators: Jacob Singer, 272 New York avenue, Brooklyn, New York, Moses Satz, 945 Fox street, Bronx and Isidor H. Brown, 1182 West Farms Road—both of Bronx, New York. Location of principal office, New York. To manufacture raincoats, etc.

The S. & M. Tire & Rubber Co., January 13, 1913; under the laws of Ohio; authorized capital, $20,000. Incorporators: Aleis Michler, Ervin S. Kintz and Charles M. Smith. To manufacture and deal in rubber and metallic tires and accessories for vehicles and other rubber products.

Savoie Tire Co., February 7, 1913; under the laws of Rhode Island; authorized capital, $100,000. Incorporators: Joseph Savoie, Central Falls, Rhode Island, Edward C. Glines, 33 Eddy street, and Harry D. Reed, 177 Westminster street, both of Providence, Rhode Island. To promote, develop and manufacture tires and protectors for automobiles and other vehicles, etc.

The United States Tire Filler Co., January 17, 1913; under the laws of New Jersey; authorized capital, $125,000. Incorporators: Robert B. and Harry E. Patton, 709 Linden street, Camden, New Jersey, and John R. Gorman, 219 South Fourteenth street, Philadelphia, Pennsylvania. To manufacture, buy, sell, trade, deal in and with patented and all other fillers of all manner and kind for automobile tires, etc.

UNITED STATES RUBBER CO.'S ISSUES.

TRANSACTIONS on the New York Stock Exchange for four weeks, ending February 22.

COMMON STOCK, $25,000,000.

[The treasury of a subsidiary company holds $1,334,000.]
Last dividend, October 31, 1912—1%.

Week Feb. 1	Sales	13,800 shares	High	66⅝	Low	65
Week Feb. 8	Sales	18,800 shares	High	68⅛	Low	65⅝
Week Feb. 15	Sales	16,750 shares	High	68	Low	63⅝
Week Feb. 22	Sales	44,700 shares	High	64	Low	60¼

For the year—High, 68⅜, January 10; Low, 60¼, February 20.
Last year—High, 67⅞; Low, 45¼.

FIRST PREFERRED STOCK, $39,824,400.

Last Dividend, October 31, 1912—2%.

Week Feb. 1	Sales	2,525 shares	High	107½	Low	107
Week Feb. 8	Sales	1,100 shares	High	107⅜	Low	106⅝
Week Feb. 15	Sales	1,600 shares	High	107⅜	Low	105⅜
Week Feb. 22	Sales	2,010 shares	High	106	Low	105

For the year—High, 109, January 8; Low, 105, February 17.
Last year—High, 116; Low, 105⅜.

SECOND PREFERRED STOCK, $9,965,000.

Last Dividend, October 31, 1912—1½%.

Week Feb. 1	Sales	.... shares	High	....	Low	....
Week Feb. 8	Sales	.... shares	High	....	Low	....
Week Feb. 15	Sales	360 shares	High	79½	Low	78¾
Week Feb. 22	Sales	.... shares	High	....	Low	....

For the year—High, 81½, January 9; Low, 78¾, February 13.
Last year—High, 85½; Low, 75.

SIX PER CENT. TRUST GOLD BONDS, $18,000,000.

Outstanding of the 1908 issue of $20,000,000.

Week Feb. 1	Sales	15 bonds	High	103¼	Low	103
Week Feb. 8	Sales	52 bonds	High	103¾	Low	103¼
Week Feb. 15	Sales	30 bonds	High	103¾	Low	103¼
Week Feb. 22	Sales	43 bonds	High	103½	Low	103

For the year—High, 103¾, February 15; Low, 102¾, January 18.
Last year—High, 105; Low, 102½.

"THE INDIA RUBBER WORLD'S" NEW MEMBER.

The force of THE INDIA RUBBER WORLD was increased on February 26, by the arrival of Henry Pearson Norton, nephew of Mr. Henry C. Pearson, the Editor, and son of Mr. A. B. Norton, of the editorial staff. The young man has not yet fully decided what department he will assume, but as at present writing he is not quite a day old, there is still time to decide this important question.

A VERY PLEASANT COMPLIMENT FROM THE PAN-AMERICAN BULLETIN.

THE Bulletin of the Pan American Union gave an exceedingly comprehensive and interesting account of the Rubber Exhibition held in New York last fall, in the issue immediately succeeding that exhibition; and in the description there appeared this extremely gracious paragraph regarding the exhibit of THE INDIA RUBBER WORLD:

"One exhibit which was of absorbing interest to all visitors, whether personally interested in the industry or not, was the booth of THE INDIA RUBBER WORLD, the greatest industrial magazine not only in this country, but probably in the world, devoted solely to the india-rubber industry. This exhibit, while confined to a space of 20 x 35 feet, was unique and could not have been duplicated anywhere on earth, should it have been destroyed, for many of the interesting articles shown were the only ones in existence. Among these were relics of the days of Goodyear, some being products of his personal skill, other souvenirs of the triumphs of his later years. They included the book, made entirely of india rubber—leaves, covers, and all—which Goodyear labored on so long, and of which there is no duplicate. There were also the two fine life-size portraits, one of Goodyear and one of Daniel Webster, painted on hard-rubber panels, by Walsh, a distinguished artist of those days. There were also speciments of hard-rubber jewelry made by Goodyear and the Cross of the Legion of Honor conferred upon him by the French Government in 1854. Other interesting exhibits in this booth were articles and curios gathered by Mr. Henry C. Pearson, editor of THE INDIA RUBBER WORLD, during his sojourn in the rubber-growing countries of South America. Among these were unique designs made from rubber, such as a miniature rubber tree with a tiny *seringueiro* tapping it; snakes, insects, etc., molded out of balata or gutta-percha; and many other articles of interest to the casual visitor. The most instructive feature, however, of this exhibit was the extensive herbarium, showing the various botanical speciments of rubber, which was arranged around three sides of the booth. Large photographs of *Castilloa* trees and other plants decorated the walls and added to the attractiveness of the exhibit."

THE AMERICAN RUBBER MANUFACTURING CO.

The American Rubber Manufacturing Co., of Emeryville, Cal., has recently elected the following officers: President, A. Borland, of the firm of Bates, Borland & Ayer, general contractors; treasurer, H. C. Norton, formerly manager of the Pacific Coast Rubber Co.; secretary and factory manager, H. A. MacKusick; superintendent, F. I. Young. Mr. N. C. Dodge, formerly manager of the Western Belting & Hose Co., of San Francisco, has been appointed general sales manager.

The company is now building in its own machine shop a 25-foot by 50-inch belt press, and also another circular loom to take care of its increased fire hose business. They have also taken up on an extensive scale the recovering of paper mill rolls, and recently received one of the largest single orders ever given a rubber company for this class of work, consisting of ten 20-inch diameter by 120-inch face rolls. They have just been awarded 8,000 feet of 2¼-inch fire hose for the city of Oakland, 3,000 feet for the Isthmian Canal Commission, 2½-inch size, besides 7,200 feet 2½-inch for Manila.

THE U. OF P.'S AMAZON EXPEDITION.

The expedition which the University of Pennsylvania has been organizing during the last year for the purpose of exploring the Amazon, and particularly the tributaries of the Upper Amazon, will be ready to sail from this country within the next few days. The leader of the expedition is Dr. William Curtis Farabee, the Commander of the yacht is Captain J. H. Rowen, U. S. N., retired, and the physician is Dr. Franklin H. Church.

MID-WESTERN FLOODS AND THE RUBBER BOOT TRADE.

IT is truly an extremely ill wind that blows nobody good, and even at the heart of the gale some one is sure to benefit. Just for example, while most of the unfortunates who live close enough to the margin of the mid-western rivers to be reached by the usual spring inundations, yearly bewail their lot, the dealer in rubbers—and particularly in rubber boots—looks upon the situation with a great deal of complacency, not to say positive satisfaction. The recent floods that visited this section were the highest ever recorded, but as usual, people in the "bottoms" all knew that the flood could not come so high as to reach *them*. Government flood-warnings? They knew better! Over-night the rivers would surely go down. So they delayed and waited, and took things calmly.

And then it happened! The muddy, relentless water crept up and up. It filled the cellar. It came into the first story. It rose

A CINCINNATI STREET IN THE RECENT FLOOD.

to the ceiling, and still higher. Skiffs came to the second-floor windows to bring the prisoners supplies. In other places, skiffs rowed in and out the parlor windows.

Then came the demand for rubber boots. One needed these, and high ones, too, to wade about in the water, rescuing one's possessions. They couldn't be had quick enough; nor did it seem as if one could buy enough of them to supply the family, and willing rescuers. Rubber boots went up to a premium and, even when the river began descending, they were still above par,—for the work of clearing cellars, and of floundering through the mud left behind.

The picture, taken in Cincinnati, gives a good idea of the indispensability of rubber boots at flood-time.

A NEW RUBBER COMPANY IN ST. LOUIS.

A new rubber company, the British American Rubber Co., has taken a long lease of property on the corner of Tenth and St. Charles street, St. Louis, Mo., for the manufacture of rubberized cloth, raincoats and other waterproof garments, and will soon install machinery. Among those interested in the company are Gerard B. Allen, John H. Gundlach, H. Lueddinghaus, Jr., and W. H. Geisse.

A CHANGE OF NAME.

The name of the Simplex Electrical Co., with offices in Boston, Chicago and San Francisco, was changed on February 1 to Simplex Wire & Cable Co. This does not, however, involve any change in the management or interest.

Official India-Rubber Statistics for the United States.

Fiscal Year Ended June 30, 1912.

INDIA RUBBER.

IMPORTS OF CRUDE INDIA RUBBER BY COUNTRIES.

From	Pounds.	Value.
Europe:		
Austria Hungary	22,792	$30,571
Belgium	6,101,346	6,011,823
France	4,139,109	3,820,294
Germany	8,820,516	6,889,740
Italy	120	93
Netherlands	283,210	253,056
Portugal	1,449,790	963,516
United Kingdom	29,728,994	31,544,048
Total	50,545,877	$49,513,141
North America:		
British Honduras	22,866	$18,609
Canada	74,922	88,210
Costa Rica	134,842	105,089
Guatemala	166,843	85,936
Honduras	108,011	75,593
Nicaragua	820,523	608,440
Panama	111,997	78,755
Salvador	25,473	19,684
Mexico	2,226,541	1,602,046
British West Indies	4,480	3,905
Total	3,696,498	$2,686,267
South America:		
Brazil	46,762,744	$31,888,425
Chile	397	556
Colombia	843,009	588,433
Ecuador	986,215	655,546
British Guiana	209	188
Dutch Guiana	492	408
Peru	608,802	484,773
Venezuela	418,049	347,841
Total	49,619,917	$33,966,170
Asia:		
China	2,300	2,691
British India	478	200
Straits Settlements	2,989,032	2,318,239
Other British Indies	3,271,168	4,460,491
Dutch East Indies	77,452	61,543
Total	6,340,430	$6,843,164
Africa:		
British South Africa	7,451	4,513
Total	7,451	$4,513
Grand Total	110,210,173	$93,013,255
Total 1910-11	72,046,260	$76,244,603
Total 1909-10	101,044,681	101,078,825
Total 1908-09	88,359,895	61,709,723
Total 1907-08	62,233,160	36,613,185
Total 1906-07	76,963,838	58,919,981
Total 1905-06	57,844,345	45,114,450

IMPORTS OF MANUFACTURES OF INDIA RUBBER BY COUNTRIES.

[+ indicates increase; — indicates decrease, compared with the preceding year.]

From—	Value.
Austria-Hungary	$20,522+
Belgium	31,217—
Denmark	304+
Germany	375,353—
Italy	2,597—
Netherlands	1,431+
Norway	7—
Russia in Europe	37,259+
Spain	30+
Sweden	155+
Switzerland	878+
United Kingdom	285,491—
Canada	4,241—
Mexico	72+
West Indies	7—
Argentina	2+
China	61+
Hong Kong	25—
Japan	972+
Australia	101—
France	114,011+
Total, 1911-12	$874,736
Total, 1910-11	875,125
Total, 1909-10	1,154,347
Total, 1908-09	1,391,770
Total, 1907-08	1,956,590
Total, 1906-07	2,262,783
Total, 1905-06	1,992,413

RE-EXPORTS OF IMPORTED INDIA RUBBER.

By countries (for year ending June 30, 1912.)

	Pounds.	Value.
Austria-Hungary	5,971	$4,443
Belgium	210,456	156,568
France	283,258	301,985
Germany	256,518	165,911
Italy	11,928	6,270
Netherlands	4,475	2,019
Portugal	10,677	8,008
Russia in Europe	1,128	755
United Kingdom	335,629	280,001
Canada	4,353,904	3,811,536
Mexico	1,713	1,225
Jamaica	50	71
Japan	135,244	151,113
Total, 1911-12	5,610,951	$4,890,905
Total, 1910-11	5,267,588	$5,439,282
Total, 1909-10	6,492,947	7,629,380
Total, 1908-09	3,791,971	2,964,496
Total, 1907-08	4,110,667	2,994,208
Total, 1906-07	4,215,350	3,593,912

RE-EXPORTS OF MANUFACTURES OF INDIA RUBBER.

	Value.
Belgium	$50
Germany	3,071
United Kingdom	1,867
Canada	1,613
Mexico	10
Cuba	63
Venezuela	7
Total, 1911-12	$6,681
Total, 1910-11	29,356
Total, 1909-10	13,568
Total, 1908-09	36,401
Total, 1907-08	176,129
Total, 1906-07	32,712

GUTTA PERCHA.

IMPORTS OF CRUDE GUTTA PERCHA BY COUNTRIES.

From—	Pounds.	Value.
France	2,781	$2,734
Germany	172,675	109,920
Netherlands	2,422	408
United Kingdom	44,447	10,644
Canada	499	100
British India	4,506	2,824
Straits Settlements	967,929	87,718
Japan	9,147	11,449
Total, 1911-12	1,204,406	$225,797
Total, 1910-11	1,648,921	390,548
Total, 1909-10	784,501	167,873
Total, 1908-09	255,559	82,136
Total, 1907-08	188,610	100,305
Total, 1906-07	546,890	201,339
Total, 1905-06	500,770	188,161
Total, 1904-05	665,217	210,188

IMPORTS OF MANUFACTURES OF GUTTA PERCHA BY COUNTRIES.

Belgium	$1,050
France	6,243
Germany	30,277
United Kingdom	3,528
Total, 1911-12	$41,098
Total, 1910-11	61,283
Total, 1909-10	80,367
Total, 1908-09	71,819
Total, 1907-08	93,545

RE-EXPORTS OF GUTTA PERCHA.

	Pounds.	Value.
Canada	1,011	$945
Total, 1911-12	1,011	$945
Total, 1910-11	62,391	19,235
Total, 1909-10	74,137	13,886
Total, 1908-09	9,370	3,730
Total, 1907-08	.....	.....
Total, 1906-07	5,000	700

RE-EXPORTS OF MANUFACTURES OF GUTTA PERCHA.

	Value.
Canada	$15
Chile	50
Total, 1911-12	$65
Total, 1910-11	8,687
Total, 1909-10	13,955
Total, 1908-09	31,308
Total, 1907-08	944
Total, 1906-07	5,005

GUTTA-JELUTONG.

IMPORTS OF GUTTA-JELUTONG (PONTIANAK).

From—	Pounds.	Value.
France	330,482	$13,443
Germany	732,642	33,281
Netherlands	229,492	20,989
Portugal	22,400	1,437
British India	456,000	21,783
Straits Settlements	46,345,637	2,142,516
Dutch East Indies	678,285	21,576
Philippine Islands	330	25
Total, 1911-12	48,795,268	$2,255,050
Total, 1910-11	51,420,872	2,872,633
Total, 1909-10	52,392,444	2,419,223
Total, 1908-09	24,826,296	852,372
Total, 1907-08	22,803,303	1,039,776
Total, 1906-07	28,437,660	1,085,098
Total, 1905-06	21,390,116	733,074
Total, 1904-05	19,104,911	641,319

RE-EXPORTS OF GUTTA JELUTONG (PONTINIAK).

	Pounds.	Value.
Germany	109,646	$5,483
Canada	8,840	596
Total, 1911-12	118,486	$6,079
Total, 1910-11	.....	.....
Total, 1909-10	2,139	112

BALATA.

IMPORTS OF BALATA.

From—	Pounds.	Value.
Germany	12,217	$6,079
Netherlands	39,932	41,572
United Kingdom	97,238	70,995
Panama	53,821	19,465
Trinidad and Tobago	26,838	12,429
Other British	6,883	5,506
British Guiana	221,711	163,504
Dutch Guiana	454,858	358,750
French Guiana	7,357	5,069
Venezuela	596,211	300,643
Total, 1911-12	1,517,066	$984,012
Total, 1910-11	878,305	624 702
Total, 1909-10	399,003	196,878
Total, 1908-09	1,157,018	522,872
Total, 1907-08	584,582	276,756
Total, 1906-07	799,029	305,041
Total, 1905-06	374,220	152,689

RE-EXPORTS OF BALATA.

	Pounds.	Value.
Germany	23,370	$13,893
United Kingdom	32,122	18,463
Canada	7,037	6,067
Total, 1911-12	62,529	$38.423
Total, 1910-11	264,589	230 575
Total, 1909-10	.....	42,750
Total, 1908-09	.....	223,907
Total, 1907-08	.....	18,741
Total, 1906-07	.....	12,659

GUAYULE.

IMPORTS OF GUAYULE GUM.

FROM—	Pounds.	Value.
Belgium	187,069	$79,567
Germany	84,882	40,019
Mexico	13,966,674	6,344,201
Total, 1911-12	14,238,625	$6,463,787
Total, 1910-11	19,749,522	10,443,157

RE-EXPORTS OF GUAYULE GUM.

	Pounds.	Value.
France	17,362	$7,773
Germany	27,014	11,397
Italy	388	194
Canada	139,867	73,516
Australia	13,317	5,637
Total, 1911-12	197,948	$98,517
Total, 1910-11	340,405	175,995

(Not reported until 1910-11.)

IMPORTS OF ELASTICON AND SIMILAR SUBSTITUTES FOR INDIA RUBBER.

FROM EUROPE—	Value.
Austria-Hungary	$94
France	38,425
Germany	1,275
United Kingdom	47,534
Total, 1911-12	$87,328
Total, 1910-11	115,601
Total, 1909-10	114,516
Total, 1908-09	60,625
Total, 1907-08	27,000

RE-EXPORTS OF ELASTICON, ETC.

	Value.
Canada	$231
Total	$231

(Not reported before 1911-12.)

SCRAP RUBBER.

Quantity and Value of Imports, by Countries.

FROM—	Pounds.	Value.
Belgium	790,322	$62,530
Bulgaria	25,683	2,167
Denmark	288,556	25,798
Finland	167,400	12,152
France	3,400,546	299,258
Germany	2,410,362	202,856
Italy	37,924	3,283
Netherlands	265,013	20,134
Norway	339,891	30,493
Russia in Europe	5,220,921	404,159
Sweden	1,050,117	93,134
Switzerland	62,020	5,603
Turkey in Europe	649,204	52,035
United Kingdom	6,455,762	505,705
Canada	4,102,962	299,458
Panama	34,603	1,438
Mexico	211,520	17,476
Newfoundland and Labrador	67,084	5,586
British West Indies	8,712	463
Cuba	185,573	15,641
Brazil	1,727	124
Chile	10,172	930
Uruguay	18,260	858
Venezuela	552	30
China	1,200	86
Hong Kong	22,400	1,116
Japan	99,397	6,514
Russian Asia	306,999	22,312
Turkey in Asia	46,074	3,747
Australia and Tasmania	12,236	519
Total, 1911-12	26,293,192	$2,095,605
Total, 1910-11	26,948,000	2,334,870
Total, 1909-10	37,364,671	2,998,697
Total, 1908-09	20,497,695	1,543,267
Total, 1907-08	16,331,035	1,496,822
Total, 1906-07	29,335,193	2,608,987
Total, 1905-06	24,756,486	1,721,678
Total, 1904-05	15,575,214	953,439

Quantity and Value of Exports, by Countries.

To—	Pounds.	Value.
Austria-Hungary	87,762	$12,197
Belgium	782,442	83,961
France	780,270	119,348
Germany	993,561	129,968
Italy	40,189	4,096
Netherlands	628,119	88,466
Norway	4,530	360
Switzerland	4,000	450

EXPORTS OF AMERICAN RUBBER GOODS, FISCAL YEAR ENDED JUNE 30, 1912.

EXPORTED TO—	Belting, Packing and Hose.	Boots and Shoes. Pairs.	Boots and Shoes. Value.	Tires For Automobiles. Value.	Tires All Other. Value.	Other Goods. Value.	Total Value.
EUROPE:							
Austria-Hungary	$6,444	64,450	$37,637	$375	$862	$19,261	$64,579
Azores and Madeira Islands	176	224	389	.....	.....	187	752
Belgium	7,733	104,485	57,016	51,620	5,468	78,576	200,413
Bulgaria	.....	30,710	17,622	.....	.....	.....	17,622
Denmark	10,423	22,751	13,030	288	197	12,920	36,858
Finland	.....	.....	.....	.....	.....	353	353
France	27,448	72,345	38,779	316,629	13,947	159,408	556,211
Germany	40,233	176,546	102,220	1,160	800	397,256	541,669
Gibraltar	.....	456	402	.....	.....	.....	402
Greece	400	5	15	.....	.....	147	562
Italy	2,237	88,769	50,325	2,387	13,425	43,917	112,291
Netherlands	3,830	7,658	3,442	405	100	42,810	50,587
Norway	5,212	23,452	14,121	79	.....	6,897	26,309
Portugal	142	21,835	16,139	271	.....	1,399	17,951
Roumania	216	14,612	9,378	174	.....	.....	9,768
Russia in Europe	5,929	3,934	2,183	.....	608	15,974	24,694
Spain	939	72,340	39,321	.....	2,059	5,791	48,110
Sweden	2,563	672	595	7,545	13,758	3,033	27,494
Switzerland	601	104,791	57,557	.....	.....	2,570	60,728
Turkey in Europe	.....	306,027	146,602	.....	.....	18	146,620
United Kingdom	210,547	644,251	348,863	1,177,746	134,153	1,340,853	3,212,162
Total, Europe	$325,073	1,760,313	$955,636	$1,558,679	$185,377	$2,131,370	$5,156,135
NORTH AMERICA:							
Bermuda	$221	596	$380	.....	$1,995	$1,765	$4,361
British Honduras	1,343	.....	.....	$612	238	368	2,561
Canada	441,222	13,112	30,752	696,433	21,371	981,250	2,171,028
Costa Rica	14,307	310	269	1,863	2,230	5,626	24,295
Guatemala	6,179	225	318	2,178	871	2,612	12,158
Honduras	2,494	.....	.....	402	117	1,908	4,921
Nicaragua	4,779	.....	.....	130	131	7,870	12,910
Panama	103,209	5,553	11,227	4,073	7,137	28,104	153,750
Salvador	8,214	60	33	346	177	21,643	30,413
Mexico	378,391	4,884	4,939	148,480	37,367	133,513	702,690
Miquelon, etc.	9	1,153	1,116	.....	.....	.....	1,125
Newfoundland and Labrador	3,409	48,523	35,972	1,144	1,360	7,265	49,150
West Indies—							
British	10,442	463	396	25,710	17,468	15,876	69,892
Cuba	156,819	8,579	7,322	21,714	80,586	129,762	396,203
Danish	284	196	199	190	30	649	1,352
Dutch	469	.....	.....	173	202	1,291	2,135
French	.....	.....	.....	134	438	544	1,116
Haiti	2,893	25	27	.....	137	1,283	4,340
San Domingo	10,798	1,014	652	2,934	3,472	7,113	24,969
Total, North America	$1,145,482	84,693	$93,602	$906,516	$175,327	$1,348,442	$3,669,369
SOUTH AMERICA:							
Argentine	$38,751	12,388	$16,346	$10,196	$5,935	$73,586	$143,814
Bolivia	3,040	144	107	.....	3	564	3,714
Brazil	40,777	68,157	41,036	24,952	11,273	81,201	199,239
Chile	57,315	7,134	7,056	354	23,682	25,833	114,240
Colombia	5,594	1,712	1,075	5,268	2,162	8,499	22,598
Ecuador	7,416	954	353	615	855	4,313	13,552
Guiana—British	1,537	4,133	1,905	1,804	1,663	2,376	9,285
Dutch	107	48	24	.....	174	947	1,252
Paraguay	77	.....	.....	.....	.....	179	256
Peru	22,325	1,072	1,166	745	275	5,179	29,690
Uruguay	1,830	20,729	12,233	849	3,186	20,687	38,785
Venezuela	8,874	440	239	1,835	1,612	11,649	24,209
Total, South America	187,643	116,911	$81,540	$46,618	$49,820	$235,013	$600,634
ASIA:							
Aden	.....	.....	.....	$30	.....	.....	$30
China	$10,221	934	$1,342	850	.....	$2,788	15,201
Japanese China	.....	516	273	181	.....	.....	454
Korea	5,787	537	901	.....	.....	701	7,389
British India	6,745	2	4	676	$1,192	8,037	16,654
Straits Settlement	2,516	.....	.....	1,312	119	637	4,584
Other British	.....	.....	.....	407	545	309	1,261
Dutch East Indies	1,850	.....	.....	6,170	479	1,385	9,884
Hong Kong	4,033	436	334	5,468	608	4,262	13,804

SCRAP EXPORTS—Continued.

United Kingdom	2,671,774	207,029
Canada	1,342,426	133,780
Japan	1,911	533
Total, 1911-12	7,336,984	$780,188
Total, 1910-11	7,049,729	723,664
Total, 1909-10	6,143,610	578,944
Total, 1908-09	4,071,795	402,897
Total, 1907-08	4,255,789	449,727
Total, 1906-07	4,756,621	548,695
Total, 1905-06	*a*	339,507
Total, 1904-05	*a*	204,945

(*a*) Not officially reported.

RE-EXPORTS OF SCRAP RUBBER.

	Pounds.	Value.
Canada	302,105	$28,196
Total, 1911-12	302,105	$28,196
Total, 1910-11	401,231	43,338
Total, 1909-10	61,395	5,373
Total, 1908-09	38,506	2,093
Total, 1907-08	21,713	2,943
Total, 1906-07	105,463	9,444

RECLAIMED RUBBER.

Quantity and Value of Exports, by Countries.

To—	Pounds.	Value.
Belgium	133,043	$25,775
Denmark	4,660	671
France	360,405	50,444
Germany	165,731	34,425
Italy	49,838	7,527
Netherlands	2,446	430
Sweden	7,880	1,530
United Kingdom	902,480	148,524
Canada	3,391,958	541,895
Japan	274,828	47,589
Australia and Tasmania	104,537	16,691
Total, 1911-12	5,397,806	$875,501
Total, 1910-11	4,994,527	781,650
Total, 1909-10	3,622,556	535,795
Total, 1908-09	3,196,551	414,861
Total, 1907-08	2,947,974	418,738
Total, 1906-07	4,550,788	665,109
Total, 1905-06	4,084,696	511,843
Total, 1904-05	*a*	522,902

(*a*) Not officially reported.

EXPORTED TO—	Belting, Packing and Hose.	Boots and Shoes. Pairs.	Boots and Shoes. Value.	Tires. For Automobiles. Value.	Tires. All Other. Value.	Other Goods. Value.	Total Value.
Japan	74,721	44,130	31,350	13,531	9,703	80,426	209,731
Asiatic Russia	1,094	91	244	.....	.....	.....	1,338
Siam	.....	.....	.....	.....	295	324	619
Persia	.....	.....	.....	.....	12	.....	12
Turkey in Asia	.....	77,686	43,269	159	.....	1,218	44,646
Total, Asia	$106,966	124,332	$77,717	$27,884	$12,953	$100,087	$325,607
OCEANIA:							
Australia and Tasmania	$127,706	399,544	$223,394	$24,081	$2,574	$124,945	$502,700
New Zealand	31,464	31,593	39,143	11,847	9,921	45,355	137,730
Other British	13	885	760	300	.....	39	1,112
French Oceania	1,208	3,932	3,421	665	137	855	6,286
German Oceania	.....	.....	.....	105	.....	17	122
Philippine Islands	93,545	5,485	6,734	73,763	103,488	125,782	403,312
Total, Oceania	$253,936	441,439	$273,452	$110,761	$116,120	$296,993	$1,051,262
AFRICA:							
British, West	$600	696	$267	$48	$16	$300	$1,231
British, South	201,229	15,354	19,905	7,049	5,773	29,163	263,119
British, East	.....	.....	.....	55	.....	12	67
Canary Islands	.....	.....	.....	91	.....	.....	91
French Africa	2,375	.....	.....	.....	.....	.....	2,375
German	.....	.....	.....	.....	.....	23	23
Liberia	46	186	113	.....	.....	14	173
Portuguese Africa	92,134	.....	.....	108	.....	1,283	93,525
Turkey in Africa—Egypt	.....	432	206	.....	1,447	1,573	3,226
Tripoli	.....	720	452	.....	.....	.....	452
Total, Africa	$296,384	17,388	$20,943	$7,351	$7,236	$32,368	$364,282
Grand Total, 1911-12	$2,315,484	2,545,076	$1,502,890	$2,657,809	$546,833	$4,144,273	$11,167,289
Grand Total, 1910-11	$2,163,416	3,984,332	$2,219,430	$2,085,107	$592,470	$3,886,825	$10,947,248
Grand Total, 1909-10	1,960,825	3,791,084	1,984,739	.....	.....	5,115,331	9,060,895
Grand Total, 1908-09	1,498,445	2,396,435	1,292,673	.....	.....	3,823,956	6,615,074
Grand Total, 1907-08	1,347,775	3,080,253	1,614,290	.....	.....	3,743,040	6,705,105
Grand Total, 1906-07	1,253,369	2,310,420	1,231,898	.....	.....	3,729,643	6,214,910
Grand Total, 1905-06	1,221,159	2,693,690	1,505,082	.....	.....	2,966,144	5,692,385
Grand Total, 1904-05	994,100	2,390,539	1,214,342	.....	.....	2,572,375	4,780,817
Grand Total, 1903-04	880,010	2,310,420	1,231,898	.....	.....	3,729,643	6,214,910
Grand Total, 1902-03	819,985	2,307,401	1,056,491	.....	.....	2,299,875	4,176,351
Grand Total, 1901-02	634,146	2,594,708	1,046,315	.....	.....	1,781,941	3,462,402
Grand Total, 1900-01	565,726	1,459,100	724,015	.....	.....	1,727,527	3,017,268

Tires were not specifically reported before 1910-11.

SUMMARY.

	1910-11. Pounds.	1910-11. Value.	1911-12. Pounds.	1911-12. Value.
IMPORTS OF FOREIGN MERCHANDISE—				
Crude India-Rubber	72,046,260	$76,244,603	110,210,173	$93,013,255
Guayule Gum	19,749,522	10,443,157	14,238,625	6,463,787
Gutta-Percha	1,648,921	390,548	1,204,406	225,797
Gutta Jelutong (Pontianak)	51,420,872	2,872,633	48,795,268	2,255,050
Balata	878,305	624,702	1,517,066	984,012
Scrap	26,948,000	2,334,870	26,293,192	2,095,605
Total unmanufactured imports (*a*)	172,691,880	$92,910,513	202,258,730	$105,037,506
Manufactures of India-Rubber	.....	$875,125	.....	$874,736
Manufactures of Gutta-Percha	.....	61,283	.....	41,098
Elasticon, etc.	.....	115,601	.....	87,328
Total manufactured imports (*b*)	.....	$1,052,009	.....	$1,003,162
RE-EXPORTS OF FOREIGN MERCHANDISE—				
Crude India-Rubber	5,267,588	$5,439,282	5,610,951	$4,890,905
Balata	264,589	230,575	62,529	38,423
Guayule Gum	340,405	175,995	197,948	98,517
Gutta-Percha	62,391	19,235	1,011	945
Scrap	401,231	43,338	302,105	28,196
Gutta Jelutong	.....	.....	118,486	6,079
Total unmanufactured re-exports (*c*)	6,336,204	$5,908,425	6,293,030	$5,063,065
Manufactures of India-Rubber	.....	$29,356	.....	$6,681
Manufactures of Gutta-Percha	.....	8,687	.....	65
Elasticon, etc.	.....	.....	.....	231
Total manufactures re-exported (*d*)	.....	$38,043	.....	$6,977
EXPORTS OF DOMESTIC MANUFACTURES—				
Scrap	7,049,739	$723,664	7,336,924	$780,188
Reclaimed Rubber	4,994,527	781,650	5,397,806	875,501
Manufactures of India-Rubber and Gutta-Percha	.....	10,947,248	.....	11,167,289
Total domestic manufactures exported (*e*)	.....	$12,452,562	.....	$12,822,978
GRAND TOTALS—				
Imports (*a*) and (*b*)	.....	$93,962,522	.....	$105,040,668
Less re-exports (*c*) and (*d*)	.....	5,946,468	.....	5,070,042
Consumption of foreign imports	.....	$88,016,054	.....	$100,970,626
Exports of domestic merchandise (*e*)	.....	$12,452,562	.....	$12,822,978

OBITUARY RECORD.

W. W. WALLIS

SUDDENLY and without a note of warning came the death of Walter W. Wallis, for 28 years the manager of the Goodyear Rubber Co.'s Milwaukee branch. Apparently in his usual good health, he arose at 5 o'clock Sunday morning, February 9, to bid goodby to a guest who had been visiting him for several days and who was obliged to take an early train. When his absence from the house was first noticed, it was thought he had accompanied his friend to the station, but when it became evident that he had not left the house a search was instituted and he was found in the basement, whither presumably he had gone to look after the furnace; but when discovered life had been for some time extinct.

Mr. Wallis was born in Milwaukee, November 18, 1852, and lived there all his life. After graduating from the public school he became connected with the Milwaukee branch, then just established, of the Goodyear Rubber Co. and in 1885 was made its manager, a position he occupied with marked success until the day of his death. He was a man of exceptional energy and conscientiousness; his house enjoyed a fine reputation in the trade, and for the year just closed showed the largest volume of sales, if not the greatest amount of profits, in its career.

Notwithstanding the time and thought and hard work that he devoted to his business, he did not let that engross his entire attention. He was an active member of the Merchants' and Manufacturers' Association of Milwaukee, and was conspicuously active in the philanthropic and religious life of the city. He was for many years a trustee of the Y. M. C. A. and was especially energetic in advancing its prosperity. He was also for many years a trustee of the Park Place Methodist Church and superintendent of its Sunday School. The esteem in which he was held by those who knew him best is shown by a statement made by one of his life-long friends, which appeared in one of the local papers the day after his death, which contained the following tribute:

"I knew Walter W. Wallis for nearly fifty years. We have worked for many of the same causes. I knew him as a friend and a companion, and the shock of his untimely death comes as a benumbing blow.

"He was one of God's true noblemen, a loving husband and father, a loyal friend, a great-hearted, Christian gentleman, whose hand was ever ready to help the fallen, whose every heart throb was given for the betterment of life and living, whose purse was ever open to every good cause, whose time was considered as a gift from God, to be used for the benefit of his family, his friends and the city of his birth."

Mr. Wallis is survived by his wife, four children—Mrs. F. H. Bennett, Baltimore, Mrs. Harold Detienne, Milwaukee; Winifred Wallis, at home, and John L. Wallis, a student at the University of Wisconsin; also by two sisters—Mrs. H. C. Graham, Milwaukee, and Mrs. G. L. Richards, Chicago—and two brothers, John and Irving, St. Paul.

The funeral was held at his home, February 11; the pastor of the church to which he had been so long attached officiated.

WALTER F. JONES.

Walter F. Jones, assistant general manager of the Revere Rubber Co., died at his home in Chelsea, Massachusetts, Tuesday, February 11, after a somewhat prolonged sickness of typhoid fever. Mr. Jones was a successful business man. Born in Chelsea 37 years ago and educated in the public schools. He entered the employ of the Revere Rubber Co. as clerk when 15 years of age. Quick to learn, active and efficient, promotions came rapidly and he was made chief clerk of the business office in Boston, then traveling salesman, afterwards factory manager and later assistant general manager.

The burial services were held at his late residence and were attended by many men prominent in business and finance, including also many of his associates in the Revere Rubber Co. and representatives of the several Masonic bodies with which he was affiliated. The officiating clergyman was the Rev. H. W. Slebbins, who performed the ceremony at the wedding of Mr. and Mrs. Jones about ten years ago. The pall-bearers, all associates of the Revere Rubber Co., were: A. R. Taft, E. H. Scribner, H. Z. Cobb, J. H. Learned, A. A. Learned, G. P. Whitmore, A. Y. Tucker and H. L. Williamson.

FRANCISCO I. MADERO, JR.

Francisco I. Madero, Jr., who recently, under compulsion, resigned the presidency of the Republic of Mexico, was assassinated in the city of Mexico a short time before midnight on February 22. Up to three years ago the late president was known only as a member of one of Mexico's oldest and most influential families—a family which had amassed great wealth through real estate holdings, and particularly through the fact that it owned vast sections of land covered with the *guayule* shrub. Not a

FRANCISCO I. MADERO, JR.

little of the family's wealth came from this source and from the several *guayule* factories owned by the Maderos in different parts of Mexico. When Madero's grandfather, Don Evaristo Madero, died in Los Angeles in the spring of 1911 it was estimated that his wealth equaled $20,000,000—an extraordinary figure for Mexico.

But the fame of Francisco I. Madero, Jr., as a figure in the rubber world has been entirely eclipsed during the last three years by reason of his political activities. While nature endowed him with almost none of the qualities for the leadership of a turbulent people, his revolt against the Diaz domination, which occurred in March of 1910, came at the psychological moment, and many Mexicans flocked to Madero's banner simply because they sympathized with him in his opposition to Diaz. From that time, three years ago, to the time of his death, his life was crowded with moving incidents. In June, 1910, he was thrown into prison by Diaz, but a few months later escaped, recruited troops, and in February, 1911, fought against the administration forces. In the following May Diaz was compelled to resign, and Madero

became provisional president, and a few days later, in June, entered the capital city acclaimed by the populace as "the savior of Mexico." In October, 1911, he was elected president, practically unanimously; but was not fitted for the herculean task before him. He lacked the dominating personality required to rule an unruly people. His administration was rendered ineffective by constant and widespread opposition.

But the grave crimes that are already laid at the door of his successor could not be charged against him. He was singularly lenient with his enemies, abhorred blood-shed, and did not seek revenge. He was, in fact, an idealist, and entirely wanting in the iron qualities needed for the administration of Federal affairs in our neighboring republic. Madero was in his 48th year.

H. L. HOAG.

Harry L. Hoag, manager of the Alling Rubber Co.'s store at Pittsfield, Massachusetts, died February 12 of pneumonia at a private sanitarium in Hartford, Connecticut, after an illness of three weeks. Mr. Hoag was born in Danbury, Connecticut, thirty-five years ago. He was formerly employed in the Hartford store of the Alling company, being transferred to Pittsfield as manager six years ago. He was a member of the Park Club and of the South Congregational Church of Pittsfield.

NEW TRADE PUBLICATIONS.

A TIRE LESSON WITH A MORAL.

IN an attractive booklet with above title, the Ajax-Grieb Rubber Co. has dealt with the consequences of inattention on the part of the driver, at the same time giving some valuable advice regarding the means by which the life of a tire may be prolonged. The various forms of injury by chains, fabric rupture, blow-outs, sand-blisters, neglected cuts, rut wearing, under-inflation, faulty alignment and other causes, are successively treated.

"How to attain a greater mileage" is the subject of detailed recommendations. Finally, a scale of the proper inflation indicates the gradations applicable to various sizes.

Two other attractive booklets with the titles, "Figures that Don't Lie," and "A Word to the Wise," discuss various aspects of the tire problem, as solved by the "Ajax." The former contains a table showing cost of "Ajax" in comparison with other guaranteed makes.

In the latter, reasons are adduced in proof of the advantage of the 5,000-mile guarantee, carried by the Ajax tire. Attention is likewise called to the fact that this guarantee is a written one, signed by the president of the company. These booklets show that the Ajax-Grieb Co. is well to the front in the matter of attractive publicity.

CATALOG OF RUBBER GOODS AND BELTING.

Apart from the staple articles of rubber manufacture, there are a large number of rubber mechanical accessories, indispensable to industrial and manufacturing operations. These form a special branch of the rubber industry, the extent of which is shown by the general catalog of W. H. Salisbury & Co., Inc., of Chicago, containing in its 257 pages a vast quantity of matter interesting to the prospective buyer. It comprises two main divisions; one of them (180 pages) subdivided into belting and belting supplies, hose and hose supplies, and engine room and plumbers' supplies. The other division (77 pages) includes: mats, matting and tiling, clothing and sundries, and miscellaneous goods.

One of the most useful features of this catalog is the abundance of its illustrations, brought out with remarkable clearness. To the distributor of any of the lines indicated this booklet will be extremely interesting and useful.

THE GORDON NEWS.

That brevity is consistent with attractiveness is shown by "The Gordon News," the bright house-organ of the Gordon Rubber Co., Canton, O. Within its four pages is grouped a quantity of literary material of interest, naturally leading up to the subject of the "Household Rubber Glove." A portrait of Mr. C. W. Keplinger, the president, gives a personal feature to this little publication, carried further by the list of "The Men Behind the Goods," including its administrative and distributing staff.

THE UNITED STATES TIRE CO.'S MONTHLY.

The publication issued by the United States Tire Co., entitled "U. S. for Us," has changed its form from a small pocket size to a shape more uniform with the popular magazines, being now 7 x 10 inches in size. The January issue is devoted quite largely to the New York Automobile Show, and contains a fine gallery of half-tone prints of the various cars displayed at that time.

A HANDSOME TENNIS BOOKLET.

THE United States Rubber Co. has just issued its net price list of tennis, sporting and outing shoes for 1912-13. Hitherto these price lists have been very modest in their appearance, simply illustrating the various shoes with a few lines of description and the prices. But this year the tennis list appears as a 16-page booklet printed in colors on a fine quality of paper, with a very artistic scene of some sporting event occupying the upper third of every page. These scenes are admirably drawn and are reproduced in delicate water-color effects. They show a golf field; a yachting race, with the winner just passing the home buoy; an exciting tennis match; a base-ball game; a gymnasium scene, with young athletes doing some wonderful work on parallel bars; a bathing scene, and a hot basket-ball fight between a couple of college teams. The booklet gives all the information that the former lists contained, but in such an artistic setting that anyone receiving one of these lists is sure to preserve it.

LATEST GOODRICH LITERATURE.

The latest batch of Goodrich literature is fully up to that company's standard. One of its most attractive features is a neat folder showing in four cuts the gathering and manufacture of the cotton which forms the "backbone of the tire," as it is pertinently called. The Goodrich fabric is made only of the finest selected long staple Sea Island cotton, of which upon selection not ten per cent. is approved. Braided Fabric Hose is also illustrated by an attractive card. In another tasty folder the merits of the "Meteor" Golf Ball are told.

Prominent among the more extensive features of this effective group of advertising matter is an illustrated catalogue of the "Goodrich Pneumatic Truck Tires," as well as a circular of the "Goodrich Wireless Motor Truck Tires," it being recorded that 570 motor truck tires of other makes were recently changed in one month to "Goodrich Wireless." A group of testimonials from various classes of tire users, in a neat booklet, serves to hold the smaller items of this attractive collection of Goodrich lore. The booklet is entitled "Kismet," the "reason why" being told by its introduction.

A BANIGAN CATALOG.

The Banigan Rubber Co., of Baltimore, has issued a highly creditable catalog describing and illustrating the great variety of rubber footwear carried by this company. The catalog contains a mass of information, given in compendious form, and shows, by means of large-sized half-tones, what the varieties of footwear described look like. In the back of the book there is a photographic picture of the Banigan company's factory at Woonsocket, Rhode Island.

The Editor's Book Table.

A MANUAL OF SHOEMAKING AND LEATHER AND RUBBER Products. By William H. Dooley, Principal of the Lowell Industrial School. With 41 illustrations. Little, Brown & Co., Boston, Mass. [8vo. 280 pp. Cloth. $1.50 net.]

WHEN the Lynn Commission on Industrial Education desired a text book on shoe manufacture, to be used in the proposed shoe school in that great shoe city, it was found that there was no such text book in existence in the English language, and the principal of the Lowell Industrial School, Mr. William H. Dooley, was invited by the Commission to prepare such a work. He accepted the invitation and devoted a great deal of time in collecting material for a book of shoe making He visited the factories of Europe, as well as those of America; and the result of his labors is a compendious book of 280 large-print pages, with many illustrations, giving in concise, clear and intelligible form all the essential information relating to the manufacture of leather and rubber boots and shoes.

The greater part of the book is devoted, naturally, to leather footwear. He describes hides and their treatment, methods of tanning, how shoe styles are made, and the departments of a shoe factory. He tells the difference between the old-time making of shoes, where each cobbler supplied the footwear for his immediate neighborhood, and the present perfected methods which pour out vast quantities of finished shoes every day from the great factories of New England and the West.

The last chapter in the book, devoted to the history of footwear will be, for the general reader, one of the most interesting; but the chapter that is most important from the standpoint of the rubber industry is that devoted to "Rubber Shoe Manufacture and Terms." Here the author begins with the collecting of the latex in the Brazilian forests and on the plantations, and follows the coagulated rubber from the shipping docks at Pará and in the East to the American factory, where it is duly cleaned, dried, compounded, calendered and cut up into the component parts of boots and shoes. Then he describes the method of constructing the boot and the shoe from these various parts, and follows by describing the processes of varnishing, vulcanizing, packing and shipping. It is an interesting story, and while it will afford no additional light, naturally, to people experienced in the practical work of the factory, it gives to the uninitiated—the student in the industrial school, the beginner in the factory, and especially to the general reader—all the essential information regarding, at least, the rudiments of rubber footwear making, and gives it in a clear, concise and readable form.

WEST INDIAN TALES OF OLD. BY ALGERNON E. ASPINALL, author of "The Pocket Guide to The West Indies" and "The British West Indies—Their History, Resources and Progress." Illustrated. Duckworth & Co., London. 1912. [8vo. 260 pp. Board covers.]

Readers of this publication will doubtless remember earlier reviews of books by Mr. Aspinall. His book on the British West Indies was reviewed at some length in the June, 1912, issue of THE INDIA RUBBER WORLD. That book contained one chapter on the rubber potentialities of the British West Indies, which, though not long, was full of interesting information.

Mr. Aspinall's latest book, "West Indian Tales of Old," contains nothing about rubber, but having to do with a part of the world in which rubber production is a matter of constantly increasing importance, it ought to appeal to people interested in rubber countries. This book contains eleven different stories, largely historical, somewhat legendary, and all good reading. The opening story, "Benbow, the Brave," describes some of the chivalrous deeds of the redoubtable English Admiral, who, a little over two centuries ago, drove the pirates away from the British possessions in the West Indies, and later, single-handed —deserted by the cowardly captains of his fleet—engaged the French, and against great odds gave an exhibition of English pluck and naval prowess, which has been a treasured incident in English history ever since. By way of introduction to the brave Benbow, there is a graphic description of the destruction of Port Royal at Jamaica Bay by an earthquake in 1692.

One story in the book that will appeal to the lovers of the mystic is "A Barbados Mystery," which relates the extraordinary occurrences that took place about 100 years ago in a certain tomb in the church-yard of Christ Church, situated on the south coast of Barbados. The moving events recorded in the story must have occurred, as they were vouched for at the time by all the local dignitaries of State and Church, but no explanation has ever been given of these gruesome phenomena.

Another extremely interesting story is "The Legend of Rose Hall," which tells of the cruel fate that overtook an exceedingly cruel woman, who, nearly a century ago, was mistress of this famous mansion, which still stands (in a dilapidated condition) near Montego Bay on the North Coast of Jamaica.

For tourists intending to embark for a cruise through the West Indies, Mr. Aspinall's book can be most highly recommended. It will greatly increase their interest in the scenes and places that make the West Indies so attractive to visitors.

THE OPERATION, CARE AND REPAIR OF AUTOMOBILES. Edited by Albert L. Clough. Revised Edition. New York, 1912. The Horseless Age Company. [Cloth. 300 pages.]

In the above comprehensive and detailed work Mr. A. L. Clough, of the editorial staff of the "Horseless Age," has grouped together a number of facts and suggestions of material value to those seeking light upon the operation of the automobile, as well as upon the best remedies for the various troubles connected therewith.

While it contains a number of sections dealing with various sub-divisions of the contents, the work has nine main divisions. In the first the subject of "Ignition" is treated in 96 pages, with full descriptions of the jump spark and torch spark ignition systems. While the latter unites electrical simplicity with a notable degree of mechanical complication the contrary is the case with the former, which is electrically more complex but simpler mechanically. Hence it has apparently been very generally adopted.

"Carburation" deals in 27 pages with the properties and treatment of gasoline, including its filtration and storage, as well as with carburetor troubles and their remedies. It finally discusses fuel consumption as a criterion of a car's condition.

Proceeding from the mechanical to the accessory features of the subject, the next point dealt with is "Lubrication," to which 18 pages are devoted. One of the most interesting chapters is that upon how to locate abnormal friction in the moving parts.

Specially interesting to the rubber man who may be also owner of an automobile is the section of 28 pages treating of tires, the scope of which is indicated by the headings of the principal chapters: "Wear due to Faults in Tire," "Some cases of Abnormal Wear," and "Hints on Tire Maintenance." Repairs, demountable rims and other kindred subjects also receive attention.

Other divisions of the work are: "Inspection, Care and Use of Motor Cars" (49 pages); "Garages, Washing and Shipping Cars" (21 pages); "Repair Suggestions" (50 pages), and "Winter Use of Automobiles" (17 pages). A well arranged index facilitates reference.

The total of 300 pages therefore covers all branches of the subject, while at every step the reader is aided by one of the 180 illustrations, which, in conjunction with several graphic charts form one of the most valuable features of the work.

Combining as it does a large amount of personal knowledge with valuable journalistic experience, Mr. Clough's work may be regarded as a distinct acquisition to automobile literature.

New Rubber Goods in the Market.

A RUBBER-SET WAGON WASHER.

AN inventive genius associated formerly with one of the oldest rubber manufacturers in the country has invented a rubber-set washer for vehicles. It consists of a rubber cup-shaped bulb provided with a coupling at one end so that it may be attached to a hose, while the other end is open and clear, with inturned rubber teeth. A sponge is inserted in this open end, and the water turned on, the pressure of which bends the rubber teeth outward so that they take a tight grip on the sponge.

This washer has various obvious advantages. In the first place, the sponge can retain no grit to scratch the varnish, because the force of the water passing through it necessarily cleans away all grit. It has no metal parts to come in contact with the varnish, and there is no waste of water, as all the water used must pass through the sponge, and be applied at the spot that is being cleaned. Moreover, there is no splashing, as is usually the case where a sponge is used in the hand. The mechanism is simple in construction, the sponge being easy to insert and to remove when the pressure of the water is relaxed. [Rubberset Co., Newark, N. J.]

RUBBER GARMENTS TO REDUCE SUPERFLUOUS FLESH.

THE world can be divided into two classes—the thin who want to get fat, and the fat who want to get thin. For the first class there is little hope; but for the second class there are sundry avenues of escape. One recently opened is a medicated rubber garment, or more properly, a series of such garments of various styles and sizes, intended to cover the male or female anatomy—in whole or in part—invented by a New York woman doctor. The accompanying cuts show some of these garments. The statement is made that if these garments are worn by people with undue flesh—particularly if they walk or take other exercise while wearing them—the superfluous avoirdupois will gradually melt away. The further statement is made that these garments can be worn with perfect safety, and that they are endorsed by leading physicians. [Dr. Jeanne Walter, 45 West 34th street, New York.]

A PNEUMATIC TIRE IN SECTIONS.

One great trouble with the pneumatic tire is the fact that all the air is in one tube and when anything goes wrong with that tube, even a little puncture the size of a tack point, out goes the air and away goes the tube. Now some inventive people in Trenton, New Jersey, have devised a pneumatic tire that is composed of distinct sections—6 to 10 sections making a complete inner tube—and each of these sections will have 30 cells running its length, so that the complete tube is composed of from 180 to 300 small tubes; anyone of which can be punctured and blown-out without affecting the others. It is called "the Roberts Sectional Pneumatic Tube" and it embodies the old proposition of dividing a large space into several smaller spaces like the tubular boiler and water-tight compartments in a ship.

FIG. 1.

Each section—molded with one end closed and the other open, as is shown in Fig. 1—is put in a patented machine filled with compressed air, and at the same time the open end is sealed, by a cap of rubber and fabric being vulcanized over it. When taken from this machine it appears as in Fig. 2. The V-shaped cut has spread apart, thus allowing for the expansion of the rubber.

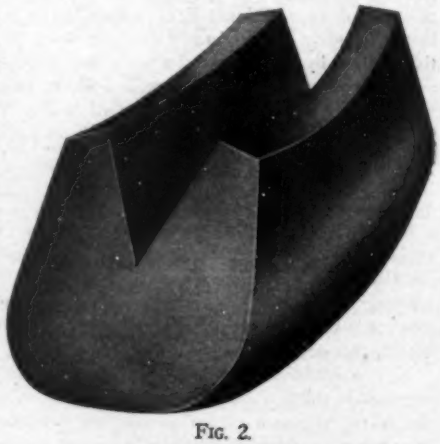


FIG. 2.

The necessary number of these sections are now cemented together, forming a ring the exact size of the inside of the shoe. To put on a wheel take the ring of sections, place in a shoe, then with an ordinary tire-iron or C-clamp draw the points of the V together and push the beading of the shoe under the rim. The pressure of the V is sufficient to hold the shoe on the rim.

It can be seen at a glance that blowouts are impossible. A nail would not penetrate more than three or four of these cells, and, as these cells are not connected, the air would

escape only from those actually punctured, the rest remaining intact.

The company expects to have these sectional tires on the market in the early spring. Roberts Rubber Manufacturing Co., Trenton, New Jersey.

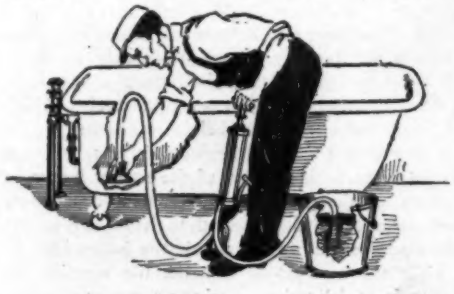
SHAVING BY PNEUMATIC AID.

THOUSANDS of fortunate people are now able to ride to their morning labors on pneumatic tires. These same people and thousands of others can start the day by shaving (if they so elect) with pneumatic assistance. Some inventive genius in Connecticut (the whole rubber industry is based on the invention of a Connecticut genius) has devised a mirror called the Aero Safety Mirror, with a rubber edge and rubber back. This rubber back, being slightly concave in form, can be pressed against a window-pane—the raised rim being slightly moistened—and will remain there when the hand is removed, because a slight vacuum is created, and the mirror is held by the pressure of the air. In other words it is a suction mirror. This mirror is of use not only to shavers, but to others, as it can be used in any place where there is a smooth surface to press it against. For instance, ladies, after a 60-mile jaunt in an auto can put the mirror up in front of them to see how much is left of their complexions, and how much awry their bonnets are. The rubber back and raised rubber edge also prevent the glass from breaking should it happen to fall. [Aero Sales Co., Hartford, Connecticut.]

THE AERO SAFETY MIRROR.

SUCTION PUMP FOR CLEANING PIPES.

LIFE contains few more aggravating experiences than the stopping-up of a drainage pipe with the resulting overflow of bath-tub or wash-bowl. The cut shown herewith illustrates a new pump—the Noppel Force and Suction Pump—which is used for removing any obstruction that gets into the plumbing. The particularly effective feature of the pump is a double lip vacuum cup. [George W. Heiland, 99 Beekman street, New York.]



A NEW TIRE VALVE.

This tire valve is made by The Burke Valve Co., Cleveland, Ohio. It differs from the regular valves in many ways. First, the valve stem is made in two parts, so that if it becomes bruised at any time on the end the end stud can be changed for a new one instead of changing the whole valve. This has a lead gasket to insure a tight joint. Second, the plunger has no spring, being a balanced valve; the pressure in the tube equaling that of the pump, so the valve closes automatically. Third, this valve has three ports for air to pass through, so that when pumping up a tire it can be done in very much less time. Those who pump up their tires by hand will be surprised at the ease and rapidity with which the tire is inflated. It has another good point—the reversible valve seat, of rubber, which rests in a metal recess in the valve seat.

"VULCAN-SET IN RUBBER" SHAVING BRUSH.

From its general adoption the safety razor has evidently come to stay. One of the results is that the individual shaving brush has in many cases become an indispensable toilet adjunct for the sterner sex. This widely extended use has encouraged manufacturers to meet the demand for better brushes and this has been effected by the "Vulcan-set in Rubber" shaving brush. The bristles and hair are first imbedded in rubber of best quality in a plastic condition, which is then vulcanized as hard as granite, by which means it becomes impossible for the former to be loosened. The brushes are made by new machinery especially constructed for the purpose, and every bristle is firmly locked in its place, being, moreover, not liable to injury by heat.

This brush has been adopted as the standard by the United States Navy, having been re-ordered in January, 1912, after experience of its use during the voyage round the world of the White Squadron. The makers claim to be the largest brush manufacturers in the world. [John L. Whiting-J. J. Adams Co., Boston, Massachusetts.]

THE "SIOUX CHIEF" BOW AND RUBBER-TIPPED ARROW.

Old as history, archery has still a living interest as an outdoor sport. While its main features differ only in detail from those known in ancient times, these details in themselves constitute appreciable improvements. Archery has at all times been a favorite sport of young people, and it is largely for their benefit that much enterprise has been shown by manufacturers in this line.

In this connection the "Sioux Chief Bow" claims to represent the latest developments. It is a steel bow with a hardwood arrow. The bow and handpiece are of polished nickeled steel 26 inches long, while the arrow is of polished hardwood 15 inches long, with soft rubber tip and weighing only eight ounces.

With the above advantages and its low retail price of 25 cents, it is considered likely to do much to revive the former taste for archery contests. [Markham Air Rifle Co., Plymouth, Michigan.]

NEW RUBBER WATERPROOFING LIQUID FOR LEATHER.

The waterproofing of leather by means of oils as hitherto practiced by tanners, has had the disadvantage that the oils quickly wear off, leaving the leather in a hard and unsatisfactory condition. "Leakanot" is the result of many years of painstaking efforts to obtain rubber in such form that it will penetrate and be absorbed by leather. It wears off very slowly, leaving the leather perfectly soft and pliable, ready for another coating after many weeks of wear.

Another distinctive advantage of "Leakanot" is that it does not discolor tan leather; thus appealing particularly to ladies wearing light colored shoes and to men of particular taste in their footwear.

For retail trade it is put up in large 50-cent containers, sufficient to waterproof several pairs of shoes, thus being calculated to last the individual customer at least one year. [National Rubber Co., St. Louis, Missouri.]

The India-Rubber Trade in Great Britain.

By Our Regular Correspondent.

A SERIOUS fire broke out early in the morning of January 17 at the works of the Leyland and Birmingham Rubber Co., Limited, at Leyland, the resulting loss being somewhere near $40,000, which, however, is covered by insurance. It is a very long time since a British rubber works has experienced such a conflagration, and it has been an arduous time for the directors, all of whom remained at hand for a week. With regard to the business, I am officially advised that comparatively little interruption has occurred, the boilers and engines being untouched. Moreover there was duplicate machinery at hand. A feature of these works is the area of ground covered with low buildings instead of the small space occupied by six or seven story buildings to be found in other important works. The building in which the fire broke out was one of the highest, being of three stories, this being the only part remaining of the original works. It was used mainly for the manufacture of surgical goods, and naturally contained much inflammable material, though no light at all has so far been thrown upon the origin of the fire. The rebuilding of the burnt portion is now being actively proceeded with on the most modern lines; and as this has long been contemplated the fire, though not perhaps to be considered a blessing in disguise, has not proved an absolute catastrophe.

FIRE AT LEYLAND WORKS.

IT IS announced that Mr. W. H. Veno has retired from the board of this company, and that the directors have elected Mr. G. W. Panter, a large shareholder, in his place. Mr. Veno was one of the new directors elected in the autumn of 1911, at the time of the first adverse balance sheet. A more surprising announcement is that Mr. George Spencer, the managing director, has resigned all connection with the company. Mr. Gray is succeeded as works manager by Mr. G. W. Price, late of the St. Helens Rubber & Cable Co., Ltd. The sales department remains in the hands of Mr. W. Downs, while Mr. M. M. McGregor, lately with the Calico Printers' Association, Ltd., has been appointed commercial manager. Mr. G. H. Cartland, for so long the chairman of the company, remains at his post, while there is no announcement of a new managing director.

CHANGES AT THE GORTON RUBBER CO.

The report of the company for its last financial year was referred to in THE INDIA RUBBER WORLD for December last, and it does not need much reading between the lines to see that the late managing director must have had an arduous time in his efforts to put the company again on a dividend paying basis after the relapse in 1911. The company reports that it is full of orders and expects a busy year in connection with the cycle tire trade. This is its most important branch, though playing balls, heel pads and various mechanical goods are made at the Gorton works.

IT IS announced in the papers that the certificate of the British Fire Prevention Committee has been awarded to Cellit non-flaming cinematograph films, this being the only celluloid substitute thus far to receive it. It can hardly be said that the committee has acted precipitately as the discovery of cellit was announced in 1901 at the works of the well-known Bayer Co. in Germany, though it certainly was not brought to perfection until many years afterwards. The main thing about its composition is that it is a cellulose-acetate camphor, instead of a cellulose-nitrate camphor body.

NON-FLAM CELLULOID.

The main drawback, if such a term is applicable where danger to life is concerned, is that cellit cannot at present compete with celluloid in the matter of price, owing to the high price af acetic acid compared with nitric acid. This may affect its sale for general technical use, but if it really is quite satisfactory for film making there is great probability that its use will be made compulsory, higher price or no. It is reported that the important Paris firm of Pathe Frères tried this substance for films two years ago, and found it satisfactory. This is important in view of the reiterated statements that the "non-flam" celluloid substitutes have all proved failures. Cellit is not incombustible, but it only ignites with difficulty, and then smoulders; while celluloid, as is known, shoots into flames under conditions which leave cellit unaffected. No doubt some definite evidence will be given before the Commons Committee which is now investigating the subject of celluloid and its storage.

I HAVE no wish to go into controversial political matters, but may be allowed to state that rubber manufacturers, among many other classes, have lifted up their voices to declaim against the Insurance Act of 1912. Some of those, however, who previously complained are now in a more tractable mood. These are the surgical goods manufacturers who are inundated with orders for bandages, etc. In the past a retail chemist stocked whatever goods pleased his fancy; now, however, those who are on what are called the insurance panels are bound to stock a certain quantity of specified goods, among which elastic bandages are prominent. The demand for these goods is consequently heavy at the moment, and coming as it has on the top of the demands from the Red Cross societies operating in the Balkans, it has caused stocks to be cleared. With regard to one form of bandage—the plain, cured, cut sheet—there are only four or five British makers; though competition from the Continent has to be met in this as well as in the elastic fabric and spread rubber varieties.

IT'S AN ILL WIND, ETC.

The amusing skit "Hoolihan on the case of Caasey" in THE INDIA RUBBER WORLD for January, based presumably on facts, reveals a state of affairs in a branch of American rubber manufacturing which is without parallel in this country. An approach to it is in the case of government contracts, where a clause empowers the right of inspection of the rubber works as desired by an official of the particular government department concerned. These officials do not pretend to have any expert knowledge of the manufacture, and as a rule the inspections do not take place while the contract is in hand, the samples for analysis being taken from deliveries. Perhaps a nearer approximation to the procedure of the Underwriters' Laboratories is to be found in the case of the engineering firms in Westminster, which act for various Indian colonial and foreign railways. These firms have inspecting engineers in their pay to make periodical visits to the works with which they are contracting. These inspectors are invariably engineers who are more at home in the steel works than in the rubber factory, in the latter case usually contenting themselves with cutting off a sample of the vulcanized rubber and sending it to headquarters for analysis. So far, except in the case of the Cable Makers' Union, which is not really comparable, there is no tendency on the part of British rubber manufacturers to certify that goods intended for general use conform to standards fixed by any association or committee. They prefer to do things their own way without dictation. This, of course, does not apply to specific contracts, where the rubber has to be made to a formula supplied. With regard to formulas I see that the new specifications for underwriters' fire hose call for 40 per cent. "Fine Pará" instead of "Pure Pará." For many years it was customary for the British Admiralty and various railway com-

HOOLIHAN ON CAASEY.

panies to specify that Fine Pará rubber only was to be used. A few years ago, however, the word Pará was deleted, and what is known as the Admiralty 8 A specification now reads, "to be made of fine rubber, with no added ingredients other than sulphur and white oxide of zinc. The sulphur is not to exceed 3 per cent. and the white oxide of zinc 40 per cent. To endure a dry heat test of 320° F., without impairing its quality; the material to be non-porous, of uniform quality and free from defects."

MOISTURE IN RAW RUBBER.

IN THE paper on Raw Rubber Contracts read by Mr. Stedman at the late Rubber Conference in New York, reference was made to the moisture question, which is understood to have received attention from the National Bureau of Standards at Washington. From the absence of any other information, and from other remarks in the paper, I gather that the condition of affairs in America is the same as in England; that is, there is no guarantee that the rubber when delivered in bulk will have the same moisture content as in the original post sample, on which it was purchased. I don't say that the case is parallel with that of silk, which has long since been put on a satisfactory basis, or with cotton, on which discussions are now taking place, with regard to the moisture in American cotton delivered in Europe. That the present state of affairs is not considered altogether satisfactory is, however, a fact. Quite recently a manufacturer was complaining to me that while the moisture in a sample of rubber sent him was 8 per cent., the bulk delivery, which the sample sent was supposed to represent, showed 14 per cent. moisture. For this discrepancy the seller said he could take no responsibility, and the buyer considered himself rather hardly treated. Doubtless this is not an isolated case and the the matter certainly seems one which is worthy of attention.

LEARNING FROM COMPETITORS.

The Advisory Committee of the English Board of Trade has arranged with the Trade Commissioners in various British Colonies, to collect and send home samples of foreign made articles which are competing with the sale of English goods in the respective markets. The branches first taken up include hardware, cutlery, etc., the samples having been placed in the hands of the Birmingham and Sheffield Chambers of Commerce for the benefit of manufacturers in those districts.

Efforts are being constantly made by the hard-worked United States consular staff in foreign countries, to obtain and forward such samples, but their work requires for its complete utilization, an organization in this country of a nature analogous to that which exists in England.

INCREASED ACCOMMODATION FOR LONDON RUBBER STORAGE.

With a view of meeting the storage requirements, necessitated by the largely increased receipts of rubber at the port of London, the St. Katharine's Docks warehouses, where the article has hitherto been stored, have been replaced for that purpose by the more commodious London Dock Warehouses. As the two docks are near each other, this change has not caused any inconvenience to the trade.

Three large single-story sheds, with ample overhead light, have been placed at the disposal of the trade for the preliminary operations connected with the examination of rubber, gutta-percha and balata. Two of these sheds are more than 250 feet in length. For subsequent storage, a cool vault of between two and three acres has been set aside.

In order to ensure a sufficient degree of moisture for the rubber in the vault, the cases are placed upon scantling, resting on mold. Being under the wool warehouses, the vault presents a minimum variation of temperature.

The first thing done when rubber arrives is to weigh, sort, and sample it; the tare of the package being also taken, and the gross weight ascertained before it is sent to the vaults for storage.

Rubber reaches London in packages of various kinds, often in old tea chests; this form of packing being no doubt the most convenient for estates interested in both tea and rubber. Balata is generally shipped in canvas coverings, and occasionally in barrels. This article was formerly stored at the Crutchedfriars (city) warehouse belonging to the port authorities, but since the recent change, it has been transferred with other rubber to the London Docks.

Satisfaction has been expressed with the new arrangements for the convenience of the London trade, as being calculated to enhance the importance of that market as a point for the distribution of rubber.

The quantity of rubber passing through the London auctions during 1912 was 18,069 tons, as compared with 9,945 tons in 1911; so the need of increased warehouse accommodations was evident.

NEW GERMAN WASTE CONCERN.

With a view to carrying on a similar business to that hitherto conducted by the waste firm of Meyer Cohn, Hanover, a new concern has been formed, under the style of the Verwertungs Gesellschaft für Rohmaterialen m. b. H. (Company for Utilization of Crude Materials, Limited). A number of the members of the management of the old firm have entered the employment of the new company, of which Herr Erich Bonwit has been appointed temporary sole manager.

A GAME PLAYED IN GERMANY.

HERE is a photograph of a group of German girls playing push-ball. This evidently is a game somewhat like basket-ball, except that the ball is vastly magnified in size, and the game played on skates, on ice, rather than on a gymnasium floor as is the case with basket-ball. Evidently, this big ball is not as heavy as it looks; being composed of rubber and air, its weight is probably not commensurate with its size. These players must be hardy young persons, as their costume would seem to indicate a sultry day at Atlantic City, rather than an ice-skating rink and the wintry conditions that usually obtain at such a place.

PLAYING PUSH-BALL ON ICE SKATES.

Analysis and Tests of Rubberized Fabrics.

DEALING with this point in a paper read at the recent Congress of Applied Chemistry, M. B. Setlik and M. J. Zopka, of Prague, indicate the steps to be taken (particularly in the case of fabrics for hospital or domestic use, or for clothing purposes) to determine their chemical and physical properties, by the application of simple and expeditious tests. The object of such determination is to ascertain whether the fabrics are suited for the purposes intended.

In analyzing rubberized fabrics, the general object is to define the composition and quantity of the mass used for the purpose of impregnation, so as to determine the quality and quantity of the coating and to define whether it contains rubber, rubber substitute or some other imitation. Another object of such analysis is to be able to imitate a given sample.

Within three years the authors of the paper have examined 500 samples of different qualities from different factories, and have arrived at the conclusion that this class of fabrics can be classified according to qualities, combinations and physical or chemical properties, into several groups of similar quality and value. The fabrics to be tested are subjected to physical, practical and technical tests, and then to chemical tests. Finally, to define the tensile or breaking strength, they are subjected to mechanical tests.

EXAMINATION OF A RUBBERIZED FABRIC.

The fabric is first tested in an empirical way, its strength and resistance being found by scratching it with the fingernail, by creasing it and by crumpling it between the hands. It is then spread out smooth and the condition of the broken places is noticed, also whether the rubberized layer is detached or is in holes. Then a large piece of the fabric is fixed upon a filtering frame, so that it forms a bag which is filled with water. The same course is pursued with the piece crumpled between the hands, both pieces being left two or three days to find their respective waterproof qualities. A good quality of fabric ought to absolutely resist water.

Another comparative test is effected by submitting one piece of the fabric to the action of a 5 per cent. acetic acid solution, and another piece to that of a 5 per cent. ammonia solution; observing at the end of two days what changes have taken place. These tests are meant to represent the action of urine, blood and perspiration. A square decimeter (15.50 square inches) is cut off the rubberized fabric and is weighed by a tangential scale by which means the weight per meter is ascertained. The thickness of the fabric is taken by the average of three different points.

After heating a piece of the fabric for three hours with about 100 cubic centimeters (6.10 cubic inches) of chloroform it is rinsed with chloroform and then with pure alcohol. The fabric is then stretched on polished glass and the coating is scratched with the back of a knife or a spatula. The appearance of the fabric treated with chloroform allows of determining the character of the rubber coating and to what depth it has penetrated the fabric, as well as its adhesion and combination. If the coating forms a solid and compact layer which comes off easily and in large pieces it contains at least 50 per cent. of rubber. If there is little rubber, but if the fabric is well impregnated, it can still render good service.

There are consequently four alternative stages for the coating:

1. To swell up and easily come entirely off.
2. To swell up, but only come off in small pieces.
3. Not to swell up, but come off in small pieces.
4. Neither to swell up nor come off.

The composition of the coating is then analyzed in the usual manner, as explained by Dr. C. O. Weber in the "Chemistry of India Rubber," page 256. In the removal of the coating from the fabric the following process is used:

(a) By the use of acetone, the resins, the resinous and mineral oils, the wax and similar combinations are extracted.

(b) The residue is treated by an alcoholic solution of potash which saponifies the saponifiable oils, by which means the rubber substitute is extracted.

The balance is rubber, mineral substance, colors, etc., which can be quantitatively and qualitatively determined by the ashes of the fabric.

SWELLING UP OF A RUBBERIZED FABRIC.

The swelling up of a rubberized fabric is more or less rapid, according to whether it is subjected to the action of chloroform, carbon, or sulphide of carbon. The fabric containing resin swells up the quickest under the action of sulphide of carbon. The more mineral substance or rubber substitute there is in a rubberized fabric, the slower and of less extent is the swelling. The layer of coating is not of the same thickness on both sides of the fabric and is not uniform in composition or adhesion. After the coating has been removed the fabric is heated for a moment in alcohol and then washed in alcohol. It is then boiled with water and weighed and is then tested for breaking strength and elasticity with a dynamometer.

As to ashes, it is evident that the less they are in quantity the better the product, while their quality is likewise a matter of importance.

Certain substances, like zinc oxide, magnesium oxide and calcium carbonate, in a certain proportion, are not only not injurious but are beneficial.

A GERMAN APPRECIATION OF THE RUBBER CONFERENCE.

Dr. Dannerth, the Honorary Secretary of the Third International Rubber Conference held in New York last September, recently received a communication from the Royal Testing Station in Berlin, Germany, signed by A. Martens, director of the station, in which the following very pleasant paragraph occurs:

"According to the reports of the members of this Station, you rendered them, on the occasion of their study-trip to America, such kind and valuable assistance that the director wishes to assure you of his personal appreciation of this courtesy."

The Station was represented at the Conference by Dr. Hinrichsen and Ingenieur Memmler. This is one among many demonstrations of the fact that the International Conference was conducive to much friendly feeling on the part of rubber men who attended it from abroad.

USE OF FILLERS VOIDING TIRE GUARANTEES.

The conditions of guarantee adopted at the recent meeting of tire manufacturers included provisions for the manner in which claims under guarantees would be admitted. One of the clauses is to the following effect:

"Any and all guarantees are expressly waived by any purchaser of these tires who uses therein any substitute for air; or who uses them under weights in excess of those for which the various tires are recommended; or who does not keep tires inflated to the pressure recommended by us."

On January 8 the National Association of Automobile Manufacturers passed the following resolution:

"That members of this association will withdraw from their warranty all cars in whose pneumatic tires there has been any substitution for the usual air cushion."

Rubber at the Paris Automobile Salon.

By a Special Correspondent.

THE thirteenth Automobile Salon, recently held in Paris, again brought to the front, the noted French manufacturers of tires; including Michelin & Co., the Etablissements Bergougnan, the Etablissements Hutchinson, the French Dunlop Co., the French B. F. Goodrich Co., the Torrilhon, Continental and Falconnet-Perodeaud concerns, as well as other regular exhibitors on these occasions.

Among the most prominent features of the Salon was the relative absence of the "anti-skid" armored protective covers, which were at one time represented by some 50 exhibitors. These covers, in chrome leather or other materials, seem to have lost favor; their disappearance having been accelerated by the introduction of the Michelin tread. This type of anti-skid was introduced in 1905 and has since gained in favor.

It is composed of a tread of chrome leather about one-sixth of an inch thick, tapered off at the edges, cemented to an undertread of rubber and fabric from one-tenth to one-eighth of an inch in thickness, and wider than the leather tread, likewise having tapered edges. Rivets pass through the two treads, the whole being cemented on the cover by a solution allowing of hot vulcanization. The chrome leather is a special quality, which will resist a temperature of 140 to 150 degs. C. (284 to 302 degs. F.). Tires furnished with this form of anti-skid are very light. Under the rivets there is placed a layer of very soft rubber, which prevents the heads of the rivets from injuring the fabric of the body and likewise increases the elasticity of the tire.

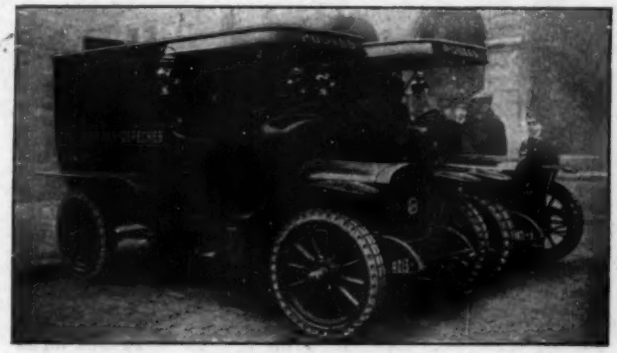
Tire repair establishments have now given up cold vulcanization and have taken up hot vulcanization; using in many cases the R. Bobet hot vulcanizer, which gives results of very regular character. These vulcanizers are all made of the same diameter and are of various lengths, according to the number of tires to be vulcanized at a time; the most usual types being those for holding 6, 9 and 12 tires.

In elastic tires and wheels there are but few new exhibits. The pneumatic and the solid tire have, however, met with a rival of daily growing importance in the "Ducasble Automatic Tire." Until its appearance there was nothing between the pneumatic and the solid tire; the so-called elastic and hollow tires far from realizing all the indispensable conditions of security, suppleness and resistance.

The Ducasble automatic tire is a species of cushioned tire containing a series of cells, communicating with the exterior air by a little channel in the lateral portion of the tire. In addition to the great suppleness thus obtained, heating is prevented by the automatic introduction of fresh air; competition in speed with the pneumatic tire being thus possible. This arrangement of interior cells is the only one by which a tire can be designed, absolutely suited for the vehicle on which it is to be used; insuring the maximum of suppleness, together with the minimum of weight compatible with the intended load. Tires can be made by this system of the qualities of rubber best suited to the contemplated load; being, moreover, adapted for all classes of motor and other vehicles, autobusses, trucks, etc., as well as bicycles.

Overturning and skidding are prevented by a series of hollow grooves in the treads for the back wheels, arranged rectangularly. This system of anti-skid is very durable, on account of the slow wear of the rubber employed. Moreover, the depressions can be remade by hand when they have disappeared through wear.

One of the latest improvements consists of certain modifications introduced in tires for city use and touring, with more rounded



POSTAL DELIVERY WAGONS.

lines; perfectly resembling pneumatic tires in their appearance, without being subject to the numerous disadvantages of the latter; such as blow-outs, repairs, rapid wear, higher cost, etc. The numerous advantages of the demountable rim in conjunction with the Ducasble automatic tire render the use of the two together advisable.

The qualities of all descriptions of the Ducasble automatic tire have earned for it a universal reputation; it being used by many corporations and traffic companies. In Paris it has been applied

THE "DUCASBLE AUTOMATIC" ON JINRIKISHA IN THE EAST.

to 3,000 cabs, as well as to the vehicles employed for the delivery of telegrams. The large stores of Paris and the principal cities of France, use it on their automobile delivery wagons; the Ducasble automatic tire being the only one which they have found to combine speed with economy.

AN EXHIBIT OF MUD-GUARDS.

Among the new applications of rubber to purposes connected with the automobile, there is to be noted the mud-guard; for which, in my opinion, there is a certain prospect of development.

On November 2 and 3 last, a mud-guard competition took place at Versailles, on which occasion the indisputable efficiency of circular rubber mud-guards was recognized.

With the extraordinary development in the large cities of automobiles and heavy autobusses, pedestrians to a distance of 15 or 18 feet and more are liberally sprinkled with mud. It is, moreover, nothing rare in narrow streets, to see it reach the first floor of stores. Under these circumstances, it is to be anticipated that police regulations will render compulsory the use of mud-guards by all automobilists in large cities.

Rubber manufacturers should not fail to give attention to this movement. Mud-guards cannot be of metal; and rubber must be used in order to obtain a combination of flexibility with efficiency. The researches of inventors have led to the introduction of circular rubber mud-guards, which form exhibits of interest; two models, the "Menu" and the "L'Eclair" calling for special notice.

The "Menu" mud-guard is composed of a hoop of rubber or of rubberized fabric, of a diameter corresponding with the wheel and placed parallel to it, at a distance of an inch or two. The mud-guard is fixed to the rim by means of catches; the rubber hoop being kept in position by a sectioned false rim, which insures the mud-guard preserving its rigidity in the event of its striking against the pavement. This style of mud-guard forms a screen in front of the wheel throughout its whole extent, by which means the splashing of mud is prevented.

The "L'Eclair" mud-guard is formed by a kind of rubberized fabric, fixed on the outside of the tire; this shield being kept in place by four elastic stretchers made of rubber, which pass behind the spokes, and by reason of their elasticity, allow of the displacement of the mud-guard in all directions. The stretchers are covered with a figured fabric in shades which harmonize with the color of the wheels. The metal hoop which holds the rubber hoop, is round in the portion resting on the tire, in order to prevent the rubber from wearing at the point of friction, while it is flat on the exterior side, so as to protect the rubber hoop against collisions with the edge of the pavement. It is placed against the side of the pneumatic tire; the shield being fixed in its groove by means of a rod. Owing to the rubber attachments, this mud-guard is very flexible. It prevents lateral splashing, and is easily fitted and unfitted; while the automobiles to which it is applied retain their ordinary aesthetic appearance, without being made too heavy.

As mud-guards appear on this occasion for the first time at an automobile exposition, I have thought it advisable to deal with them in detail. They will doubtless be used in the large cities in a number of instances, and it is possible that their employment may become compulsory with certain classes of vehicles. Rubber manufacturers are interested in the question, for all the tests hitherto made lead to the conclusion that circular rubber mud-guards solve the problem of preventing lateral splashing.

NEW FRANCO-AMERICAN AUTOMOBILE FACTORY.

Benjamin Briscoe, former president of the United States Motor Co., is reported to have established an automobile factory at Billancourt, France, with a staff of French and American engineers and designers. Interest attaches to the fact that this is the first American automobile plant to be established in France.

In addition to manufacturing in France, the new company will, it is understood, assemble in England parts made in Detroit. Operations at the latter point will probably be under the management of Mr. Briscoe, who is about to return to that city, to supervise the erection of a factory, with a special view to the American trade.

THE JAPANESE RUBBER INDUSTRY DURING 1912.

EARLY in 1912, the Sugii Rubber Works of Tokio, the Tiger Rubber Works of Osaka and the Osaka Rubber Works, were established.

Other works established in 1912 included: Kobe Rubber Works, Kobe; by English experts, for making tires and tubings. Kumano Rubber Works, Osaka; all lines of rubber manufactures. Kusumoto Rubber Works, Honjo, Tokio; fibrous rubber and waterproof silk fabrics. Setton Rubber Co., Ltd., Hyogo; capital, $50,000; for manufacturing tires. Saskane Leather Belt & Rubber Co., Ltd., Osaka; capital, $500,000, one-fourth paid in; the available funds to be used for purchasing the rights and plant of the Sakane Belt Factory, and for establishing the manufacture of rubber tires and hose. Kanto Rubber Waterproof Co., capital, $100,000; to manufacture waterproof goods. Kume Rubber Manufactory, Tokio; to produce all lines of rubber goods.

Various small concerns were established at Tokio, principally for the manufacture of "Tabi" soles.

The Yokohama Electric Wire Works, Ltd., have rebuilt the shops burnt in February, 1912, but the inside mechanical installation is not yet completed. The Osaka branch works have been moved to Hyogo.

A change was made during the year in the management of the Asia Rubber Co., Ltd., Tokio, Mr. Masakuni Yamada becoming general director in place of Mr. Masao Watanabe. The Tiger Rubber Works, Osaka, changed its name to the Hosono Rubber Works, Mr. G. Hosono having become proprietor. It manufactures all descriptions of tires, as well as heels and other rubber goods.

One-half of the plant of the Fujikura Electric Wire & Rubber Co., Ltd., burnt in May, 1911, has been rebuilt; while the Nippon Rubber Co., Ltd., which likewise suffered from fire at the same time, has replaced all its buildings, removing its headquarters to larger premises in Tokio. The plant of the Osaka Rubber Works, established in January, 1912, was subsequently acquired by the Kansai Rubber Works of Osaka..

Sumitomo Electric Wire Works, of Osaka, purchased an extensive site for the erection of their new additional factory buildings.

FIBROUS RUBBER.

This material, for the manufacture of which the Kusumoto Rubber Works, of Tokio, was established, is composed of crude rubber, powdered cork (for decreasing weight) and wool or some fibrous compound. Fibrous rubber resembles any other rubber in appearance, but on being handled its lightness becomes apparent. It is specially advantageous for tires, being light, durable and sustaining friction without heating.

FIRST OFFICIAL VISIT TO A RUBBER FACTORY.

On May 15, 1912, Baron Makimo, Minister of Agriculture and Commerce, paid an official visit to the Meiji Rubber Works, Tokio, accompanied by several experts. This is the first recorded instance of such a visit.

JAPANESE CRUDE RUBBER IMPORTS.

Although it is known that Japanese imports of crude rubber increased during 1912, the exact figures are not yet available. Meanwhile, the following summary will give an idea of the principal sources:

Imported from	Descriptions
SINGAPORE	Borneo; India; Plantation Pará sheet, biscuit and crêpe; Jelutong.
CEYLON	Plantation Pará sheet, biscuit and crêpe.
AMERICA	Upriver fine Pará; Islands fine Pará; Bolivian fine; Guayule; Balata sheet.
AFRICA	Gold Coast lump; Mozambique.
LONDON	Upriver fine Pará; Rubber paste.

IMPORTANCE OF VARIOUS GRADES.

First in the order of importance comes Plantation Pará sheet and biscuit (from Singapore and Ceylon); second, Upriver Fine Pará (from New York and London); third, Borneo (from Singapore); fourth, India (from Singapore); fifth, Islands Fine Pará (from New York).

Few Japanese rubber manufacturers know how many grades there are of crude rubber, the Japanese industry being still in the early stages of its development. Only about four or five grades are familiar to them. Hence their requirements are relatively simple. Electric wire companies mostly use Pará; toy balloon manufacturers only Borneo and Pará biscuit. Other manufacturers use all of the grades named.

THREE INTERESTING CHARTS.

Three interesting charts have been prepared by Mr. Y. Matsuo, director of the Tokio office of De Wette & Co., representing the local movements during 1912 of prices for three standard grades, which may be summarized as follows:

	Lowest	Equaling per lb.	Highest	Equaling per lb.
Upriver Hard Fine Pará....	Nov. 7	$1.09½	March 27	$1.30½
Pará sheet (Fair av'ge quality)	Nov. 4	$1.00½	April 15	$1.26½
Borneo No. 1.....	Nov. 4	$0.52½	March 14	$0.66

THE BALATA INDUSTRY OF SURINAM, DUTCH GUIANA.

By a Resident Correspondent.

DURING the year just ended the balata industry of Surinam, Dutch Guiana, suffered terribly owing to the unprecedented drought that passed over the colony. This long spell of dry weather began in November, 1911, and lasted until the middle of May, 1912. The condition was then serious. There were large numbers of contracted men (bleeders) who were compelled to remain in Paramaribo (the capital) owing to the low state of the rivers and the scarcity of water for drinking and other purposes in the bush. These men had to be fed by their employers, according to the terms of contract, for as long as they were detained in town. This paying out of money weekly by the companies and others engaged in the industry, was the cause of much dissatisfaction and the result was that many laborers were released from their contract (*pro tem*) to enable them to obtain employment on the plantations and other places.

This arrangement was on the part of the employers a wise one, for it released them temporarily from further disbursements to the men. About the end of May the weather began to be favorable for bleeding operations and the bulk of expeditions left Paramaribo for the hinterland. Soon after tapping operations began another difficulty presented itself, the trees began to blossom, and operations were stopped. Experienced balata men resorted to prospecting their grants rather than incur the expense of bringing their workers into town. This was wise, for in September, when the trees were again fit for bleeding, the collectors knew exactly the extent and number of trees they had to handle, and bleeding operations were rushed ahead with a determination to make up for the time lost. The results were that the production for 1912 was not so alarmingly low as was expected. After taking into consideration the many drawbacks and unforeseen circumstances which attended the industry in 1912 the returns can fairly be said to be satisfactory. In reality the bleeders have only been at work for three months out of the nine which makes up the season in a year.

The balata produced in the colony during 1912, according to Government reports, amounted to 1,651,000 pounds; of which 65,116 pounds were produced from private lands; the balance from concessions.

NOTES FROM BRITISH GUIANA.

From Our Regular Correspondent.

BALATA IN 1912—THE PROSPECTS FOR THIS YEAR.

THE year closes better for the balata industry than could have been expected. The exports are very much reduced, of course, as compared with the total for 1911, but they are not so discouraging as was feared would be the case and large shipments are still coming down from various parts of the colony, chiefly from the Siparoni district, for the Consolidated Rubber and Balata Estate, Ltd. The completed returns for 1912 place the balata export at 705,214 lbs., against 1,149,924 lbs. for 1911. Consideration is now being given to the work of 1913. The drought and all its consequences are being forgotten as rapidly as possible. Prospections for the year have been good, provided the reports are reliable, and if management is prudent there ought to be less difficulty with labor. One thing is assured, and it is that the advances—a pernicious feature of the industry—will be on a far less generous scale. Companies have been too seriously hit by the drought to throw money away in advances. Most of the employers have accordingly agreed to a set of fourteen different conditions for 1913, drawn up by the council of the Institute of Mines and Forests, and covering the whole question of advances in its various ramifications—the granting of store orders, the payment of hotel bills and transportation, the giving of bonuses and the treatment of absconders.

It is believed that adherence to these conditions will probably mitigate the labor troubles which have been such a burden on the industry in the past.

THE POSITION OF RUBBER—EXTENSIVE PLANTING.

Although the export of rubber during 1912 was very small, chiefly owing to the drought, the foundations of an industry have been laid. A good deal of work was done in a quiet way during the year, and it is estimated that there are at the present time 3,000 acres under cultivation. At Calabash Creek, Canje, and Davson's, the sugar estate owners have established cultivation on a fairly large area. On the east coast of Demerara experiments on sugar estates have shown that rubber does not thrive on wind-swept areas or on the heavier types of land on the front of the estates, but that better results are obtained when the plantings take place in well-sheltered positions. On the Demerara river plantations—the Diamond and Noitgedacht—tappings have already taken place on 12-year-old trees, and it has been demonstrated that on loamy land, with a regular rainfall and beyond the reach of the wind, satisfactory growth may be expected with certainty. Large areas of land in the Pelder district, on the west bank of the Demerara, are exceptionally well adapted, both in respect to soil and the prevailing meteorological conditions for the cultivation of Pará rubber. On the Demerara river, at Plantation Christianburg, the Government has established an experimental station. The experiments have proved that light sands are not favorable to the rapid growth of rubber.

Cultivation proceeds on the west shore of Demerara. Aliki, situated in the rain belt of the Essequibo, and on the right bank of the river, is admirably adapted to the cultivation of rubber. The young trees have made good progress. Satisfactory growth has been made at Liberty Island, at the Onderneeming School Farm, Essequibo. The Golden Fleece, sugar estates on the same coast, have put in a large number of plants which have made fair progress. Near Bartica there are the Hills Estates where good work is being done. In the Pomeroon district suitable land has been found, and the farmers there are keen over the cultivation of rubber. The Northwest District of the colony has the largest cultivation of rubber, the soil there being well adapted to it.

VICISSITUDES OF THE AMSTERDAM BALATA COMPANY—DIFFICULTIES WITH LABOR AND PROSPECTORS.

A semi-official defence of the Amsterdam Balata Company, which recently went into liquidation, has been published in the local press, which throws an interesting light upon the manner in which the balata industry in the colony has been exploited. In the course of the statement it is asserted: "The company was formed in Holland in a few days through the energy of the late Col. Link. The Colonel passed as an expert in balata matters and gave assurances to his friends there that the licenses he had to sell were most valuable. He was backed by good credentials, and also had the statement of Mr. Melville that the licenses were most probably valuable. The sale to the company was accompanied by a guarantee that the licenses sold would yield 450,000 lbs. of balata in the first two years, and the vendor companies bound themselves to pay any deficit. No cash was paid for the licenses; the vendors accepting shares for the purchase money. Under such conditions several business men in Holland were persuaded to, and did form a company and easily raised a substantial sum of money as a working capital. The capital was ample to work for two years, even with the worst of bad luck.

"The company, at great expense, sent a prospecting expedition to the Roiwa Grants last year and received a written report from one who was considered trustworthy, that balata existed on the grants and that at least 100 men could be sent in 1912 to work a part of the grants which cover a very large area. These Roiwa Grants are practically on the Brazilian frontier. The journey to them occupies the greater part of three months. The other licenses, nearer Georgetown, purchased by the company, were all thoroughly prospected at great expense and proved to be valueless. The Roiwa Grants were, therefore, the only hope left. Under the contract with the vendors the company was bound to work the grants. The directors were, therefore, left in this position. They knew that they had been deceived about the grants near Georgetown; they had every reason to believe that the Roiwa Grants were valuable; they were bound to work the grants purchased. At the beginning of the year the company had in hand what appeared to be abundant means to equip and pay all expenses of expeditions to the Roiwa Grants to bleed and thoroughly prospect them, and arranged through their representative in the colony, Mr. de Flines, to do so.

"The unfortunate drought which prevailed early in the year compelled not only this company, but all others engaged in the balata industry, to make very large advances so as to enable the men engaged to live until they could leave for the Bush. This unexpected call was very heavy and cost the company at least £2,000. The company, in order to meet the men, made what may be termed generous contracts with them, so as to compensate them for the hardships they had to endure. The great body of men have proved most unsatisfactory. Their unwillingness to work, and the consequent delay have caused considerable loss to the company, a loss that is not under-estimated at another £2,000. The expedition has returned without any balata. The report that there was wood for 100 men has been proved to be false. The company has spent over £30,000 in the colony and has received nothing for it. The vendor companies are without any means to pay the deficit. Owing to this and to the drought, and the unwillingness of the men to work, the capital has been exhausted and there is a deficit at present of about £3,000 to meet which there are many valuable assets to be realized."

GERMINATION OF RUBBER SEEDS.

At a meeting of the Board of Agriculture held recently, Professor Harrison, reporting on the germination result of rubber seeds for 1912-13, said the percentage was not very high. They had about 119,000 young plants, and would have probably a few more, and taking the whole shipment the percentage had been about 70 per cent. It was lowered by the shipment from Ceylon, which was guaranteed to give 75 per cent., but only yielded 55 per cent. The Singapore shipment varied from 65 or 66 per cent. to about 80 per cent. in germination.

COMMISSIONER OF LANDS AND MINES' REPORT—RUBBER AND BALATA STATISTICS.

The annual report of the Commissioner of Lands and Mines (Mr. Fowler), which has just been issued, states that the balata industry suffered from unreliability of the laborers, but that the decrease in production is chiefly attributable to the severe drought. One hundred and sixty-three balata-collecting licenses were issued, of which 47 were in lieu of licenses which had expired and were being extended. The estimated area held under balata-collecting licenses was 83,000 square miles. The registration of balata laborers was conducted by the Institute of Mines and Forests, 7,012 laborers being registered. The commissioner reports that the interest evinced in rubber planting was not as strong as during the previous year. Planting operations were, however, actively pursued by the Bartica Agricultural Estates, Ltd. (an American company), which had 489½ acres under *Hevea Brasiliensis*, on 221½ acres of which sisal was interplanted. With the exception of Plantation Noitgedacht, Canal No. 1 Demerara, none of the cultivated rubber trees had reached a tappable age. On this estate the age of the trees ranges from one year to 15 years, the average girth of the trees tapped being 39 inches (the smallest 20 inches and the largest 43 inches), the average yield of rubber per tree being 2¾ lbs.

THE NEXT RUBBER EXHIBITION—COLONY TO BE REPRESENTED.

At a meeting of the Permanent Exhibitions Committee, just held, it has been decided that the colony shall be represented at the Rubber Exhibition to be held in London in June, 1914.

GOVERNMENT REPORT ON BRITISH GUIANA RUBBER.

Official estimates place the area under Pará rubber in British Guiana at 1,800 acres. There was a keen demand in 1912 for Pará rubber plants, some 45,000 of which were sold by the Department of Science and Agriculture. Private importations of stumps (which are inspected by the Board of Agriculture at port of entry), amounted to over 170,000, while there were also large importations of seeds from the East. On some estates, according to the Colonial Office report, trees planted in 1907-08 and 1908-09 are now being tapped.

A CASTILLOA PLANTATION IN COLOMBIA.

A recent Consular report from Barranquilla contains this information regarding *Castilloa* planting: "About thirty-six miles west of the town of Rio Hocha a company is developing a large plantation of rubber (*Castilloa elastica*), having now 60,000 trees, which were planted twelve years ago. This is the principal plantation of this character in northeast Colombia. The company is experimenting now with the *Hevea brasiliensis* and also with Ceara rubber, and it is intended to further extend this plantation. The rubber trees are doing well."

BAHIA AS A CONSUL VIEWS IT.

Recent Consular reports from Bahia are not particularly optimistic regarding the immediate success of rubber production in that district. The Consul writes: "Although many species of rubber-producing trees thrive well in this district, the difficulties presented by the lack of means of transportation in those sections where the most rubber trees are found, and by the scarcity of competent labor and efficient supervision are almost insurmountable beyond a certain extent; so that no material increase in the production of rubber here is to be looked for in the very near future."

WATERPROOF CLOAKS FOR SOUTH AMERICA.

It is reported that several leading English houses have been shipping waterproof cloaks in considerable quantities to South America. The principal article is the so-called "capote" or "poncho" of waterproof material; large enough to cover both rider and horse.

Some Rubber Planting Notes.

CEYLON RUBBER EXPORTS DOUBLED IN 1912.

ACCORDING to the official reports for last year, the exports of rubber from Colombo amounted to 15,001,075 pounds, as compared with 7,154,658 pounds for 1911; the increase being thus nearly 110 per cent. It is of interest to note (as shown by details in another column) that the exports to the United States represented 4,833,085, as compared with 2,045,499 pounds the previous year; the augmentation being at the rate of 140 per cent.

During the year 1912, the exports from Ceylon to the United Kingdom amounted to 8,176,523 pounds, as against 3,956,812 pounds in 1911. When, however, allowance is made for the quantity of Ceylon rubber which finds its way to this country through the English market, this seemingly increased English consumption would prove to be more apparent than real.

TEN YEARS OF CEYLON RUBBER EXPORTS.

A valuable supplement to the "Weekly Times of Ceylon" recently gave the following interesting data as to the exports of Ceylon rubber for each of the last ten years:

	Pounds.		Pounds.
1903.....	41,798	1908.....	912,125
1904.....	77,212	1909.....	1,492,580
1905.....	168,547	1910.....	3,586,854
1906.....	327,661	1911.....	7,154,658
1907.....	556,080	1912.....	15,001,075

AFRICAN CEARA RUBBER.

Interesting experiments have lately been carried out by the Imperial Institute, London, upon samples of Ceara rubber from the Sudan, Northern Rhodesia and Portuguese East Africa.

The Sudan type, of light brown sheet of good elasticity and tenacity, was found to contain 82.7 per cent. caoutchouc; 6.4 per cent. resin; 7.8 per cent. protein and 1.4 per cent. ash; being valued at 4*s*. 9*d*. per pound, with fine hard Pará at 4*s*. 8*d*.

A sample from Northern Rhodesia, from three and a half year old trees, showed proportions of 71.7 per cent. caoutchouc, 4.3 per cent. moisture, 6.7 per cent. resin, 14.6 per cent. protein, and 2.7 per cent. ash. The valuation was 4*s*. to 4*s*. 3*d*., with fine hard Pará at 5*s*. 3*d*. Notwithstanding the high proportion of protein and resin, the rubber was considered of promising quality.

RUBBER CULTIVATION IN KELANTAN.

According to a recent official report the area planted with rubber in the Malay State of Kelantan, was increased during the year 1911 from 5,402 to 11,010 acres. In addition a considerable acreage had been during the year cleared for planting. The previous improvement in the condition of the estates had been well maintained; the opinions of planters who had visited Kelantan being to the effect, that trees three to four years old in that State, when they have had proper care and treatment, are six months in advance of those of the same age in the Federated Malay States. Tapping had already commenced on some estates.

DOMINICA RUBBER.

From the analysis recently made by the Imperial Institute, London, of a sample of Pará rubber prepared from *Hevea Brasiliensis* trees growing in the Botanic Gardens, Dominica, the composition shows the high proportion of 93.9 per cent. caoutchouc, the result being somewhat better than was obtained by an analysis of similar samples in 1908. The opinion is expressed by the Institute that the Pará trees in Dominica will furnish rubber of excellent quality, which will realize good prices in the market.

SENOR ARANA TO GO TO LONDON.

Despatches received about the middle of February from Iquitos, Peru, state that the Upper Court revoked the order of arrest issued by a judge of the Lower Court against Señor Julio Arana, the chief director of the Amazon Co., which owns the rubber concessions of Peru. After an investigation into the atrocities committed in the Putumayo district, Senor Arana announced his intention of proceeding to London.

A NEW MEXICAN RUBBER TREE.

The discovery of a new rubber tree in Mexico has been reported by the West India Committee Circular. It is said to be known by the natives under the name of *Cacaloschili*, and to be one of the many species of the *Plumeria*, from which a high class rubber can be obtained. The rubber from the young branches is superior in quality to that from the stem of the tree, hence tapping is not practised. It is stated that the coagulated sap contains 21.9 per cent. resinous matter, 15 per cent. water and 25.5 per cent. caoutchouc.

Mr. Stuart R. Cope, of London, has called attention to the fact that the late Dr. Olsson Seffer some years ago placed in his hands a memorandum on the subject of a plant called by the Indians *Cacaloxuchitl*, which he recognized as a variety of *Plumeria*. Dr. Seffer, it is added, was the first to study the *Plumerias* and *Jatrophas* of Mexico from a scientific point of view.

GUAYULE PLANTS OPERATING AGAIN.

While the disturbances in the city of Mexico have during the last two or three weeks been of such a nature as to attract the attention of the whole world, 3,000 people being killed, according to the estimates, in the conflict between the different factions, the situation in some other parts of Mexico has materially improved. According to reports received from Torreon about the middle of February, the Guayule industry is assuming a normal condition in that district. Prospects are now favorable for a much larger production of crude rubber during the present year than the factories were able to turn out last year.

The Intercontinental Rubber Co., which operates the largest guayule rubber factory in Mexico, situated at Torreon, has again placed its plant in operation after several weeks of idleness, due to the lack of a sufficient supply of raw material. This shortage has been filled by large shipments of the shrub. The factory is now running with a full force of men, and there promises to be no further interruption to its steady operation. The Cedros ranch embracing 2,000 000 acres, which is owned by the Intercontinental company and which is the chief source of supply of guayule shrub for its factories, is now free from rebels.

MEXICAN PLANTATIONS RATHER QUIET.

It is hardly to be expected that rubber developments in Mexico would, under the present exceedingly disturbed conditions, show very rapid progress. The following paragraph taken from a consular report from Frontera, Mexico, is, therefore, not surprising: "Owing to local conditions little development work has been done on the rubber plantations. As most of the American plantations in this State are operated on the installment plan, they are at present experiencing difficulties in carrying on their operations. During 1911 the exports of rubber through this port to the United States amounted to 357,543 pounds, valued at $369,530. Of the above total 35 to 40 per cent. was wild rubber.

INCREASED PRODUCTION OF MEXICAN RUBBER.

That large proportionate increases are not confined to the East, is shown by the figures of the U. S. receipts of Mexican Rubber for the last two fiscal years:

	Pounds.	Value.
1910-11.....	853,805	$ 822,651
1911-12.....	2,226,541	1,602,046

Mexican rubber has only since 1910-11 been reported separately from guayule.

Recent Patents Relating to Rubber.

UNITED STATES OF AMERICA.

ISSUED JANUARY 7, 1913.

NO. 1,049,335. Vehicle wheel. J. Brittell, Port Henry, N. Y.

1,049,346. Artificial breathing apparatus. J. H. Dräger, Lübeck, assignor to Drägerwerk; Heinr. & Bernh. Dräger, Lübeck, Germany.

1,049,369. Reinforcement for cushions of pool and billiard tables. F. W. Kelley, Sioux City, Iowa.

1,049,392. Weather strip. J. D. Pierce, assignor to Monarch Metal Weather Strip Co.—both of St. Louis, Mo.

1,049,418. Vehicle wheel. H. E. Stratton, Empire, Ohio.

1,049,442. Quickly detachable tire holding ring. W. N. Booth, Cleveland, Ohio.

1,049,448. Swimming glove. H. P. Case, Stockton, Cal.

1,049,497. Cushion wheel. J. L. La Driere, Albuquerque, New Mexico.

1,049,579. Vehicle wheel. A. H. Harris, Youngstown, Ohio.

1,049,584. Suspenders. J. Holtzmann, Baltimore, Md.

1,049,617. Antiskidding device. W. H. Snyder, Ashbourne, Pa.

1,049,635. Springwheel. S. F. Zenger, Covington, Pa.

1,049,677/8. Cooling device for pneumatic tires. A. B. Craig, Tarkio, Mo.

1,049,727. Splash preventer. L. J. Jones, London, England.

1,049,751. Antiskidding device. H. W. Maurer, Cleveland, Ohio.

1,049,813. Truss. F. Dassori, New York.

1,049,864. Hose supporter. M. B. Jennings, Pawhuska, Okla.

1,049,892. Overshoe retainer. H. J. McGee, Punxsutawney, Pa.

1,049,893. Antiskidding device for tires. I. D. Meals, Harrisburg, Pa.

1,049,899. Metal tire protector. J. Morasky, Forbes, Colo.

1,049,937. Vehicle tire. Alfred Steinhauser, Philadelphia, Pa.

1,049,968. Hose clamp. H. O. Allen, Ellwood City, Pa.

1,050,061. Coupling link for antiskid chains. E. S. Holmes, Jr., Washington, D. C.

Designs.

43,438. Resilient tire. C. H. Semple, Trenton, N. J.

43,439. Resilient tire. C. H. Semple, Trenton, N. J.

Trade Marks.

15,691. The Koy-Lo Co., New York. The word *Koy-Lo*. Hairpins made of rubber, composition, etc.

62,155. Airease Tire Filler Co., Washington, D. C. The word *Airease*. Tire filler compound.

66,447. I. W. Hoyer, Philadelphia, Pa. The word *Flexillion*. A synthetic rubber compound for waterproofing, etc.

ISSUED JANUARY 14, 1913.

1,050,128. Vehicle wheel. A. Haller, Sioux City, Iowa.

1,050,197. Resilient wheel for vehicles. A. Zimprich, Oberndorf-Purgstall, Austria-Hungary.

1,050,297. Wheel tire. D. Ronconi, Eveleth, Minn.

1,050,326. Abdominal and hip supporter and stocking attachment. H. Abramson, Philadelphia, Pa.

1,050,383. Pedal for bicycles, etc. O. Overton, Mobile, Ala.

1,050,384. Pedal for motorcycles, etc. O. Overton, Mobile, Ala.

1,050,442. Elastic cord. F. H. Frissell, assignor to the Russell Mfg. Co.—both of Middletown, Conn.

1,050,481. Resilient wheel. B. Marley, W. P. Thacker and R. P. Barnard, Nokomis, Ill.

1,050,491. Tire valve. M. C. Schweinert, West Hoboken, N. J., and H. P. Kraft, New York, assignors to A. Schrader's Son, Inc., New York.

1,050,492. Water bag fixture. M. C. Schweinert, West Hoboken, N. J., and H. P. Kraft, New York.

1,050,498. Vacuum carpet cleaner. M. Teehan, Philadelphia, Pa.

1,050,506. Vehicle wheel. O. Zarth, Aurora, Ill.

1,050,526. Horseshoe. J. E. Downs and G. D. McNames, Battle Creek, Mich.

1,050,581. Tire. B. Walter, Livermore, Pa.

1,050,603. Conveyor belt. T. A. Bennett, assignor to The B. F. Goodrich Co.—both of Akron, Ohio.

1,050,615. Hose coupling. Leo Coates, Pittsburgh, Pa.

1,050,636. Tire protector. S. W. Funk, Charter Oak, Cal.

1,050,688. Rotary air pump. J. Petermoller, Holm Foundry, assignor to G. & J. Weir, Ltd.—both of Cathcart, Scotland.

1,050,727. Antiskidding tire armor. D. Fasold, Keswick, Iowa.

1,050,767. Air pump. H. A. Fleuss, Thatcham, England, assignor to The Pulsometer Engineering Co., Ltd., Reading, England.

ISSUED JANUARY 21, 1913.

1,050,790. Tire tread. F. M. Rawden, Toronto, Ontario, Canada.

1,050,798. Detachable tread for tires. J. A. Bowden, Los Angeles, Cal.

1,050,803. Syringe. W. T. Buckner, Shelbyville, Ky.

1,050,813. Hose supporter. A. P. S. Deem, Belpre, Ohio.

1,050,853. Spring wheel. J. Sanders, Washington, D. C.

1,050,858. Wheel. H. O. Shockley, Darlington, Wis.

1,050,859. Resilient wheel. H. O. Shockley, Darlington, Wis.

1,050,861. Cushion tire. A. M. Smith, Petersburg, Va.

1,050,886. Vehicle tire. A. B. Wetherell, Pittsburgh, Pa.

1,050,942. Check valve for pneumatic tires. C. A. Haas, St. Louis, Mo.

1,050,950. Resilient wheel. E. E. Julien, Watseka, Ill.

1,050,989. Adjustable nozzle. G. F. Niuffer, Springfield, Ohio.

1,051,004. Toy balloon. W. Pfeiffer, Walla Walla, Wash.

1,051,038. Tread for auto tires. W. H. Weddington, Lankershim, Cal.

1,051,046. Brake pipe for railway cars. E. Witzenmann, Pforzheim, Germany.

1,051,053. Vehicle wheel. C. Altman, Wilber, Neb.

1,051,057. Valve cap. C. R. Bailey, Los Angeles, Cal.

1,051,058. Valve cap. C. R. Bailey, Los Angeles, Cal.

1,051,079. Demountable rim and tire fastener for wheels. C. F. Burkhart, New York, assignor to W. J. Reiman, Buffalo, N. Y.

1,051,083. Holder for garden hose. G. J. Chambers, Denver, Col.

1,051,103. Machine for internally coating tubes. J. R. Harbeck, assignor to Detroit Can Co.—both of Detroit, Mich.

1,051,117. Resilient tire. F. W. Karches, assignor to Fidel Ganahl Lumber Co.—both of St. Louis, Mo.

1,051,132. Elastic wheel. J. Leonard, Parc-St.-Maur, France.

1,051,135. Nozzle. G. Linderborg, Erie, Kan.

1,051,167. Garment supporter. M. A. Simmons, Pittock, Pa.

1,051,174. Hose coupling. D. H. Taylor, Tercio, Col.

1,051,178. Elastic wheel. T. Whitehead, Blackpool, England.

1,051,187. Tire tightener. W. R. Badwell, Tuscaloosa, Ala.

1,051,236. Automobile wheel. A. Johnston, Great Falls, Mont.

Designs.

43,453. Ornamental design for tire. F. B. Carlisle, Malden, Mass.

43,454. Ornamental design for tire. F. B. Carlisle, Malden, Mass.

43,455. Antiskid device for dual tired motor trucks. M. H. Cleaver and W. R. Corbin, Kingston, N. Y., assignors to Never Skid Mfg. Co., Inc., New York.

ISSUED JANUARY 28, 1913.

1,051,396. Hose connector. J. Fentress, Hubbard Woods, Ill.

1,051,457. Vehicle wheel. B. H. Seevers, Akron, Ohio.

1,051,465. Cushion tire. D. J. Thayer, Pittsburgh, Pa.

1,051,472. Antiskidding grip tread. H. D. Weed, Syracuse, N. Y.

1,051,482. Cow milking apparatus. G. A. Brodie, Portland, Ore.

1,051,490. Tool for repairing pneumatic tires, etc. T. C. Dobbins, Los Angeles, Cal.

1,051,500. Corn husking machine. E. S. Jones, Mobile, Ala.

1,051,517. Vehicle wheel. L. L. Rogers, Boston, Mass., assignor to Standard Auto Spring Wheel Co., Phoenix, Ariz.

1,051,573. Life saving suit. J. Gera, Baltimore, Md.

1,051,621. Hose connector. L. R. Nelson, Peoria, Ill.

1,051,628. Spring hub for vehicle wheels. J. C. Pearson, Natchitoches, La.

1,051,694. Demountable rim. E. R. Cox, Ladonia, Tex.

1,051,715. Case for combs. D. L. Edwards, New York.

1,051,716. Collapsible bag. M. H. Eiseman, Chicago, Ill.

1,051,738. Pneumatic tire. G. Kavanagh, St. John's, Newfoundland.

1,051,745. Spring wheel. O. C. Merrick and Frank Jefferson, Seaford, Del.

1,051,767. Cushion heel. F. Rossbach, Frankfort, Germany.

1,051,798. Vehicle tire. W. F. Beasley, Plymouth, N. C.

1,051,805. Hose coupling. J. J. Danverg, Beach, N. D.

1,051,813. Tire protector for automobile and other wheels. F. Kilcher, Birsfelden, Switzerland.

1,051,850. Surgical appliance. T. T. Sandmark, Port Townsend, Wash.

1,051,851. Horseshoe pad. G. Knapp and D. Cruice, assignors to J. M. Ehrlich—both of New York.

Reissues.

13,521. Stamp. W. J. Pannier, Jr., assignor to Pannier Bros. Stamp Co.—both of Pittsburgh, Pa.

Trade Marks.

57,040. Boston Rubber Shoe Co., Malden and Boston, Mass. Picture in a circle of a seal on a cake of ice with word "SEALON." Rubber boots and shoes.

[NOTE.—Printed copies of specifications of United States patents may be obtained from THE INDIA RUBBER WORLD office at 10 cents each, postpaid.]

GREAT BRITAIN AND IRELAND.

PATENT SPECIFICATIONS PUBLISHED.

The number given is that assigned to the Patent at the filing of the application, which in the case of these listed below was in 1911.

**Denotes Patents for American Inventions.*

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 8, 1913.]

20,548 (1911). Mud guards. C. J. and G. Wilson, Preston street, Brighton.

*20,594 (1911). Pressure gauges for tires. W. P. Hammond, 96 Warren street, New York, U. S. A.

20,640 (1911). Inflatable garments, etc. W. D. Williamson, Canbelego, New South Wales.

20,658 (1911). Bicycle tire inflators. L. Briggs, Kenmore Cottages, Quorn, Leicestershire.

20,702 (1911). Impregnated leather tire covers. A. Hardcastle, Highfield, Hawkhurst, Kent.

*20,711 (1911). Feeding bottles. G. R. Shepherd, Winthrop, Mass., U. S. A.

20,730 (1911). Tire covers. J. Bartlett, 67 Grove Hill Road, Denmark Park, London, and A. E. Cellett, 4 Thornby avenue, Osterley Park, Middlesex.

20,743 (1911). Syringes. R. Edwards, The Gardens, Beechy Lees, Sevenoaks, Kent.

20,748 (1911). Spring wheel. T. Brown, 139 Wingrove Gardens, and J. Fogan, 223 Wingrove Road—both in Newcastle-on-Tyne.

20,778 (1911). Depressions of golf ball surfaces. A. Johnston and North British Rubber Co., Castle Mills, Edinburgh.

20,855 (1911). Spring wheels. R. Blakoe, 96 Maida Vale, London.

*20,888 (1911). Spring wheel with cushions. T. H. Grigg, 3838 Baring street, Philadelphia, Pa., U. S. A.

20,993 (1911). Elastic substitute for inflated tubes. M. D. Rucker, "Heimath," Foxley Lane, Purley, Surrey.

20,994 (1911). Composite rubber tire. M. D. Rucker, "Heimath," Foxley Lane, Purley, Surrey.

21,044 (1911). Auxiliary rims. A. Turnbull, St. Mungo Works, Bishopbriggs, Glasgow.

*21,060 (1911). Spring wheels. N. Cornfield, 2 W. 14th street, New York, U. S. A.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 15, 1913.]

21,118 (1911). Tapping rubber trees. T. McKenna, 31 Basinghall street, London.

21,120 (1911). Spring wheels. C. P. Rundle, 149 Grove Lane, Denmark Hill, London.

21,148 (1911). Mud guards. J. Menu, 41 Rue Saint Ferdinand, Paris.

*21,304 (1911). India rubber compositions. E. von Vargyas, 5527 Second avenue, Pittsburgh, Pa., U. S. A.

21,424 (1911). Cow milkers. E. Schultz, Stanley street, West Melbourne, Victoria, Australia.

21,440 (1911). Tire attachments to rims. G. Webb, Priory street, Monmouth.

21,519 (1911). Isoprene and its homologues. J. Y. Johnson, 47 Lincoln's Inn Fields, London.

21,566 (1911). Rubber reclaiming. F. W. Golby, 36 Chancery Lane, London.

21,567 (1911). Rubber reclaiming. F. W. Golby, 36 Chancery Lane, London.

21,583 (1911). Sectional spring wheels. J. E. Graham, 14 Albert Palace Mansions, Battersea Park, and G. Wallace, 48 Old Compton street W. —both in London.

21,607 (1911). Block tires. L. Gaucherand, 76 Rue Molière, Lyons, France.

21,627 (1911). Bottle fastenings. H. Williams, 35 Lark Hill, Farnworth, Bolton.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 22, 1913.]

21,691 (1911). Detachable rim attachments. A. C. Palmer, St. Margarets, Park avenue, and J. Craig, 82 Ampthill Road—both in Bedford.

21,748 (1911). Detachable rim attachments. W. T. Smith, Harlington Road, Bolton.

21,749 (1911). Improvements in golf balls. W. T. Smith, Harlington Road, Bolton, Lancashire.

21,779 (1911). Siphon bottles. J. Dittrich, 15 Ampton street, London.

*21,787 (1911). Cushions for tires. H. B. Montgomery, 902 North 2d street, Harrisburg, Pa., U. S. A.

21,874 (1911). Tire valves. J. S. Clarke and G. Spencer, Moulton & Co., 77 Cannon street, London.

21,909 (1911). Improvements in tread bands. C. Kioque, 24 Rue Duret, Paris.

21,916 (1911). Improvements in stamp-inking pads. E. Steiger, 3 Meierweg, Zurich, Switzerland.

21,917 (1911). Improvements in tire covers. W. W. Wiggins, "Whareiti," Albert avenue, Chatswood, near Sydney, Australia.

[ABSTRACTED IN THE ILLUSTRATED OFFICIAL JOURNAL, JANUARY 29, 1913.]

*22,027 (1911). Spring wheels. J. S. Gammon, 209 Park street, Detroit, Mich., U. S. A.

22,074 (1911). Protective band for tires. G. A. V. Longuemare, 34 Rue de la Hene, Sainte-Adresse, Havre, France.

22,177 (1911). Block tires. J. H. Betteley, 24 Old Square, Lincoln's Inn, London.

22,301 (1911). Removing and replacing tires. E. Behn, 37 Schutzenstrasse, Karlsruhe, Germany.

22,319 (1911). Washing hose pipes. M. Kummer, 2 Faschinggasse, Volkermarkt (Karnten), Germany.

*22,339 (1911). Improvements in tread bands. A. W. Savage, Duarte and Savage Tire Co., Monrovia—both in California, U. S. A.

22,247 (1911). Disk wheels. S. Geezynski, 57 Schönhauser Allee, Berlin.

22,396 (1911). Apparatus for closing punctures. F. T. Porter, 18 Larkhall Rise, Clapham, London.

THE FRENCH REPUBLIC.

PATENTS ISSUED (with Dates of Application).

444,963 (April 10, 1912). T. D. Kelly. Flexible composition for replacing rubber.

445,230 (June 20). A. D. Laurent. Improvements in automobile and other tires.

445,260 (June 21). H. K. Heide. Air chamber composed of separate cells for automobile and other tires.

445,265 (June 21). J. & J. Schoenfeld Freres. Rubber dancing toy, working by compressed air.

445,371 (June 25). W. D. McNaull. Pneumatic automobile tires.

445,395 (June 25). J. Lend. Improvements in pneumatic tires.

445,477 (May 14). Van Driessche & Mahen. Improvements in elastic tires.

445,485 (June 5). H. T. Mawley. Tire filling substance and its manufacture.

445,664 (July 2). D. Maggiosa. Improvements in solid tires.

445,704 (July 2). Michelin & Co. Appliance for fitting pneumatic tires.

445,722 (July 3). E. Füllner. Rubber covered rollers for paper machines.

445,727 (July 3). J. Guerrero. Improvements in elastic tires.

445,917 (July 9). A. O. Remy. Rods for pneumatic tires.

445,929 (July 10). Gordon & Barchete. Pneumatic tires.

445,951 (July 10). Gesellschaft für Teerverwertung. Manufacture of substance similar to rubber.

446,014 (July 12). A. Toudet. Unperforable tire protector.

446,043 (July 13). L. J. Tetlow. Protective tire cover.

446,075 (July 16). H. M. Ambler. Improvements in tires.

446,244 (September 26, 1911). G. Reynaud. Process of rubber manufacture.

446,291 (July 26, 1912). J. F. P. Peignet. Antiskid rivet.

446,354 (July 23). McAuslin. Insertion of vertical elastic pieces in footwear, to facilitate putting on and taking off.

446,433 (June 22). A. Abts. Mud guards for automobiles and other vehicles.

446,469 (July 24). A. Libert & Dewarzegurs. Pneumatic tires.

446,501 (October 3, 1911). B. Abeil & fils. Antiskid for tires.

446,506 (July 22, 1912). V. A. Roux. Protective anti-puncture armor for tires of automobiles, bicycles, etc.

[NOTE.—Printed copies of specifications of French patents can be obtained from R. Bobet, Ingenieur-Conseil, 16 avenue de Villiers, Paris, at 50 cents each, postpaid.]

THE GERMAN EMPIRE.

PATENTS ISSUED (with Dates of Validity).

256,174 (April 20, 1912). Process for cleaning rubber. H. P. C. G. Debauge, Paris.

256,173 (May 1, 1912). Durable combination of leather with vulcanized rubber. Alfred E. Petersen, Carlsruhe, Germany.

256,216 (February 3, 1912). Coagulation of latex. Wilhelm Pahl, Dortmund.

256,413 (November 1, 1911). Rubber substitute of technical value. Farbenfabriken, vorm. Fried. Bayer & Co., Leverkusen and Elberfeld.

256,369 (May 1, 1912). Cooling of pneumatic tires. A. B. Craig, Tarkio, Missouri, U. S. A.

256,370 (February 9, 1912). Covers with removable treads, for pneumatic tires. Walter Wohlert, Fährstrasse 15, Hamburg.

256,684 (December 30, 1911). Tapping tool resembling an axe. Jacob da Costa Gadelha, Nova Vista, Brazil.

256,487 (August 30, 1911). Process for production of tires with a filling of froth. Fritz Pfleumer, Marienstrasse 48, Dresden.

256,753 (February 14, 1911). Production of certain objects through the coagulation of viscose in open molds. Dr. Otto Eberhard, Heidenau, near Pirna, Germany.

256,904 (November 28, 1911). Process for the preservation and improvement of rubber latex. Dr. Georg Eichelbaum, Augsburgerstrasse 82, Berlin.

256,696 (April 21, 1912). Motor truck wheel with solid rubber tire. H. Büssing, Brunswick, Germany.

SEVEN INCH PNEUMATICS.

JUST what the limit in size of pneumatic tires is going to be it might be difficult at present accurately to prophesy, but that the tendency is towards larger tires for heavy vehicles there is no doubt. Some recent tests have been made with 7-inch tires on cars weighing, with load, 2½ tons, and the tests have proved very satisfactory. The larger tires have several advantages. In the first place, there is a bigger expanse of rubber to grip the roadway, which reduces the tendency to skid; in the second place there is, of course, more resiliency in a 7-inch tire than in one half that size, as a 7-inch tire means a 7-inch air cushion around the rim. With a larger tire it is possible to have a lower air pressure which decreases the liability of blow-outs. As against these advantages is the greater initial cost of the larger tire, which calls for a greater quantity of rubber and other materials —but the advantages seem to outweigh the disadvantages.

Report of the Crude Rubber Market.

STARTING from date covered by last report (January 25) at 4*s.* 5¼*d.* the London market for fine Pará has gradually dropped during February, reaching on February 25, at time of writing, 4*s.* 0½*d.* The various stages of the decline were reached as follows: 4*s.* 4*d.* January 30; 4*s.* 2¼*d.* February 5; 4*s.* 2*d.* February 17; 4*s.* 1¼*d.* February 18. From 4*s.* 4¼*d.*, or 1*d.* below Pará fine, plantation pale crepe, first latex, followed practically the same course during the month; reaching on February 25, at time of writing, 4*s.* 0½*d.*

The two principal standards are therefore now quoted on the same level. While hovering for about a week just above the four-shilling mark, the price has been kept from going beneath that line; notwithstanding the large quantities offered at the two February auctions. The falling off during the month has been in fine Pará, 4¾*d.* per pound, and in plantation, 3¾*d.*; the two grades both standing on February 25 at 4*s.* 0½*d.*

The London auction of January 28 included 970 tons, of which practically the whole was sold at a reduction of 2*d.* to 3*d.* per pound below the previous fortnightly sale. Satisfaction was expressed at the ready manner in which the trade operated on the lower basis thus established. At the sale of February 11 there were about 1,000 tons offered, which realized prices about 1*d.* to 1½*d.* per pound below the rates of January 28. Cable advices regarding the sale of February 25 report the quantity offered as 900 to 1,000 tons; prices averaging about 2*d.* per pound below those of a fortnight earlier.

New York prices followed the movement of those reported from London, local demand being restricted to the meeting of actual requirements. From about the middle of the month, the tone of the market was affected by the labor troubles at Akron and Trenton, reported in other columns. Large tire manufacturers have been holding off, and a similar policy has affected consumption in all markets. Liberal arrivals have, moreover, tended to depress prices. Still, according to latest reports, the rubber market has suffered less than might have been anticipated from the strikes.

The Antwerp sales of January 23 included 545 tons, of which 344 were Congo and 205 Plantation. Of the former, 274 tons were sold at an advance of about ⅝ of a penny. For the latter, which was all sold, the prices obtained showed a falling off to the extent of ¾ of a penny.

At the Hâvre sale of January 21, only 18 tons were sold out of the 70 tons offered. Prices were relatively satisfactory to holders; an average advance of 1.65 per cent. being established. For the sale of February 26, about 115 tons were declared.

The Amsterdam sale of February 14 included 62 tons *Hevea*, 15 tons *Ficus* and 6 tons of various descriptions. It resulted to the satisfaction of holders; the whole offering being practically sold at unchanged prices. For February 21 there was scheduled a sale at Rotterdam of 35 tons, mostly Congo.

NEW YORK QUOTATIONS.

FOLLOWING are the quotations at New York for Pará grades, one year ago, one month ago, February 28—the current dates:

	Mar. 1, 1912.	Feb. 1, 1913.	Feb. 28, 1913.
PARA.			
Islands, fine, new	107@108	98@ 99	91 @ 92
Islands, fine, old	108@109	.....	.....
Upriver, fine, new	109@110	104@105	96 @ 97
Upriver, fine, old	112@113	.....	.....
Islands, coarse, new	62@ 63	51@ 52	46½@ 47
Islands, coarse, old	.....	.....	.....
Upriver, coarse, new	92@ 93	79@ 80	71 @ 72
Upriver, coarse, old	94@ 95	.....	.....
Cametà	65@ 66	51@ 52	48 @ 49
Caucho (Peruvian) ball	93@ 94	78@ 79	71½@ 72½
Caucho (Peruvian) sheet	.....	.....	.....
PLANTATION CEYLONS.			
Fine smoked sheet	130@131	109@110	101 @102
Fine pale crepe	129@130	104@105	97 @ 98
Fine sheets and biscuits	125@126	103@104	96 @ 97
CENTRALS.			
Esmeralda, sausage	91@ 92	77@ 78	71 @ 72
Guayaquil, strip	.....	.....	.....
Nicaragua, scrap	90@ 91	76@ 77	69 @ 70
Panama	.....	.....	.....
Mexican plantation, sheet	.....	.....	.....
Mexican, scrap	89@ 90	75@ 76	.....
Mexican, slab	.....	.....	.....
Mangabeira, sheet	68@ 69	.....	.....
Guayule	60@ 61	60@	.....
Balata, sheet	89@ 90	85@ 86	82 @ 83
Balata, block	55@ 56	55@ 56	52 @ 53
AFRICAN.			
Lopori, ball, prime	109@110	.....	.....
Lopori, strip, prime	.....	.....	.....
Aruwimi	105@106	.....	.....
Upper Congo, ball, red	110@111	.....	97 @ 98
Ikelemba	.....	.....	.....
Sierra Leone, 1st quality	98@ 99	95@ 96	.....
Massai, red	101@102	96@ 97	88 @ 89
Soudan, Niggers	.....	92@ 93	.....
Cameroon, ball	70@ 71	75@ 76	68 @ 69
Benguela	71@ 72	73@ 74	65 @ 66
Madagascar, pinky	.....	.....	.....
Accra, flake	27@ 28	25@ 26	25 @ 26
EAST INDIAN.			
Assam	.....	.....	85 @ 86
Pontianak	..... 5¾@	7@7⅛	8 @ 8½
Borneo	.....	.....	.....

COMPARATIVE RUBBER STATISTICS.

	Comparative Rates of Fine Pará. Liverpool.				Comparative Rates of Fine Pará. New York.			Total Exports from Pará Pará Weights.	Total Imports into the United States. Pará Grades. Excluding Caucho.	Cent. E. I. Af., & Caucho.	Plant. Ceylon.	Guayule.
	s.	*d.*		*s.*	*d.*							
1894	2	9	to	3	1	$0.64½	to $0.73	18,246 tons	9,453 tons	5,190 tons	.....	.....
1895	3	0½	to	3	4¼	.70	to .81½	20,698 "	9,888 "	6,294 "	.....	.....
1896	3	0½	to	3	8¾	.71	to .85	21,530 "	9,221 "	5,112 "	.....	.....
1897	3	5	to	3	9	.79½	to .89	22,630 "	10,491 "	7,180 "	.....	.....
1898	3	7½	to	4	5	.82	to 1.06	21,890 "	9,739 "	8,881 "	.....	.....
1899	3	10	to	4	7¼	.91	to 1.10	25,115 "	12,498 "	10,597 "	.....	.....
1900	3	8½	to	4	9	.83	to 1.11½	26,727 "	11,985 "	8,483 "	.....	.....
1901	3	4	to	3	11½	.76	to .95	30,296 "	13,142 "	10,066 "	.....	.....
1902	2	10	to	3	9½	.66	to .92	28,668 "	12,901 "	8,941 "	.....	.....
1903	3	6¼	to	4	8	.78	to 1.13	31,079 "	13,934 "	10,826 "	.....	.....
1904	3	10¾	to	5	6	.89	to 1.32	29,984 "	14,367 "	13,256 "	.....	.....
1905	4	10½	to	5	8¾	1.13	to 1.35	33,913 "	13,881 "	14,754 "	.....	.....
1906	4	11½	to	5	5½	1.16	to 1.28	35,251 "	15,128 "	14,808 "	.....	.....
1907	2	11¾	to	5	3	.69	to 1.24	37,321 "	15,118 "	14,315 "	.....	2,992 tons
1908	2	9¼	to	5	5	.65	to 1.30	38,848 "	17,316 "	12,161 "	.....	3,850 "
1909	4	10	to	9	2	1.13	to 2.15	39,287 "	17,591 "	11,808 "	1,730 tons	8,674 "
1910	4	10	to	12	4½	1.16	to 2.90	37,954 "	14,896 "	14,409 "	3,611 "	10,656 "
1911	3	10	to	7	1	.90	to 1.67	35,936 "	15,892 "	12,640 "	6,556 "	8,091 "
1912	3	11	to	5	2	.93	to 1.22	43,467 "	19,241 "	15,807 "	15,003 "	6,105 "

New York.

In regard to the financial situation, Albert B. Beers (broker in crude rubber and commecial paper, No. 68 William street, New York) advises as follows: "The money market has continued easy during February with a good demand for paper, and during the early part of the month rates ruled at 4½@4¾ per cent. for the best rubber names, and 5@5½ per cent. for those not so well known, but after the middle of the month rates ruled rather firmer at 5@5¾ per cent. for the various grades, and some as high as 6 per cent."

NEW YORK PRICES FOR JANUARY (NEW RUBBER).

	1913.	1912.	1911.
Upriver, fine	$1.02@1.09	$1.03@1.11	$1.15@1.30
Upriver, coarse	.78@ .84	.90@ .94	.90@ .98
Islands, fine	.97@1.01	.97@1.07	1.00@1.15
Islands, coarse	.52@ .58	.62@ .64	.62@ .69
Cametá	.52@ .60	.63@ .66	.64@ .73

WEEKLY MOVEMENT OF LONDON PRICES FOR FINE PARA, 1912.

[IN SHILLINGS AND PENCE PER POUND.]

July 5, 1912	4/9	November 1	4/4½
July 12	4/10	November 8	4/5
July 19	4/10	November 15	4/5¼
July 26	4/11¾	November 22	4/5¼
August 2	4/11	November 29	4/5½
August 9	5/0½	December 6	4/7
August 16	5/0½	December 13	4/7
August 23	5/2	December 20	4/6½
August 30	5/1¾	December 27	4/7½
September 6	4/11½	January 3, 1913	4/7¼
September 13	4/9½	January 10	4/6½
September 20	4/8	January 17	4/6½
September 27	4/7	January 24	4/5¼
October 4	4/7	January 31	4/4
October 11	4/7	February 7	4/2¾
October 18	4/6½	February 14	4/3
October 25	4/6	February 21	4/0½

IMPORTS FROM PARA AT NEW YORK.

[The Figures Indicate Weight in Pounds.]

JANUARY 24.—By the steamer *Christophe*, from Manáos and Pará:

	Fine.	Medium.	Coarse.	Caucho.	Total.
Arnold & Zeiss	201,500	51,200	220,500	72,300=	545,500
New York Commercial Co.	96,400	24,700	91,700	130,400=	343,200
Henderson & Korn	68,200	12,500	95,600	4,700=	181,000
Meyer & Brown	40,800	7,400	17,000	62,300=	127,500
Robinson & Co	90,000	16,800	20,200	200=	127,200
General Rubber Co	63,000	.....	57,600	800=	121,400
H. A. Astlett	9,300	2,500	22,400	.....=	34,200
Ed. Maurer	800	300	14,000	6,500=	21,600
L. Johnson & Co	10,800	.....	.....	.....=	10,800
G. Amsinck & Co	.....	.....	.....	10,500=	10,500
De Lagotellerie & Co	7,200	300	.....	.....=	7,500
Total	588,000	115,700	539,000	287,700=	1,530,400

JANUARY 27.—By the steamer *Javary*, from Iquitos:

H. A. Astlett	1,600	.....	1,000	9,000=	11,600
W. R. Grace & Co	3,000	.....	2,000	1,000=	6,000
Total	4,600	.....	3,000	10,000=	17,600

FEBRUARY 4.—By the steamer *Francis* from Manáos and Pará:

Arnold & Zeiss	199,300	17,000	317,700	26,100=	560,100
New York Commercial Co.	182,200	39,500	87,200	9,000=	317,900
General Rubber Co	106,500	22,700	44,200	5,900=	179,300
Henderson & Korn	80,400	5,300	29,700	600=	116,000
Meyer & Brown	24,200	5,900	49,600	29,000=	108,700
Robinson & Co	36,000	10,400	8,000	.....=	54,400
De Lagotellerie & Co	12,900	1,400	20,400	.....=	34,700
Ed. Maurer	.....	.....	23,700	.....=	23,700
H. A. Astlett	17,200	300	5,500	.....=	23,000
Total	658,700	102,500	586,000	70,600=	1,417,800

FEBRUARY 15.—By the steamer *Dunstan*, from Manáos and Pará:

Arnold & Zeiss	147,000	15,000	130,300	44,300=	336,600
New York Commercial Co.	187,500	44,600	49,000	8,700=	289,800
Ed. Maurer	54,800	.....	40,900	124,800=	220,500
Meyer & Brown	75,900	19,600	79,000	6,300=	180,800
Henderson & Korn	15,700	.....	.....	80,100=	95,800
De Lagotellerie & Co	45,800	2,500	15,200	.....=	63,500
General Rubber Co	31,900	.....	19,400	.....=	51,300
Robinson & Co	24,000	6,200	10,100	.....=	40,300
G. Amsinck & Co	22,500	700	10,600	5,600=	39,400
Hagemeyer & Brunn	8,200	1,800	4,000	600=	14,600
H. A. Astlett	1,000	1,800	7,900	1,100=	11,800
Total	614.300	92,200	366,400	271,500=	1,344,400

PARA RUBBER VIA EUROPE.

		POUNDS.
JANUARY 24.—By the *Vaderland*=Antwerp:		
Meyer & Brown (Fine)		9,000
JANUARY 27.—By the *Campania*=Liverpool:		
Arnold & Zeiss (Fine)	50,000	
Robinson & Co. (Fine)	9,000	
A. W. Brunn (Fine)	7,000	66,000
JANUARY 27.—By the *Pennsylvania*=Hamburg:		
Ed. Maurer (Fine)		8,000
FEBRUARY 3.—By the *Carmania*=Liverpool:		
Arnold & Zeiss (Fine)	50,000	
N. Y. Commercial Co. (Fine)	11,000	
Robinson & Co. (Fine)	8,000	
Rubber Trading Co. (Fine)	7,000	76,000
FEBRUARY 5.—By the *Kroonland*=Antwerp:		
A. W. Brunn (Fine)		7,000
FEBRUARY 17.—By the *Kaiserin Auguste Victoria*=Hamburg:		
N. Y Commercial Co. (Fine)	11,500	
N. Y. Commercial Co. (Coarse)	11,000	
Rubber Trading Co. (Fine)	7,000	29,500
FEBRUARY 17.—By the *Cevic*=Liverpool:		
Arnold & Zeiss (Fine)	34,000	
J. H. Rossbach & Bros. (Fine)	34,000	68,000
FEBRUARY 17.—By the *Campania*=Liverpool:		
Arnold & Zeiss (Fine)	89,000	
Arnold & Zeiss (Caucho)	45,000	134,000

OTHER NEW YORK ARRIVALS.

CENTRALS.

[*This sign, in connection with imports of Centrals, denotes Guayule rubber.]

		POUNDS.
JANUARY 24.—By the *Momus*=New Orleans:		
Eggers & Heinlein	4,500	
Robinson & Co	3,500	
Wessels, Kulenkampff & Co	3,500	
Various Others	9,000	20,500
JANUARY 24.—By the *Tennyson*=Bahia:		
Adolph Hirsch & Co		35,000
JANUARY 25.—By the *Morro Castle*=Vera Cruz:		
Harburger & Stack	5,500	
In transit	7,000	12,500
JANUARY 27.—By the *Pennsylvania*=Hamburg:		
Ed. Maurer	*25,000	
Wallace L. Gough Co	4,500	
Ed. Maurer	15,500	45,000
JANUARY 27.—By the *Cymric*=Liverpool:		
Adolph Hirsch & Co	22,500	
Robert Brauenhop	4,500	27,000
JANUARY 27.—By the *Mesaba*=London:		
Adolph Hirsch & Co		25,000
JANUARY 28.—By the *Advance*=Colon:		
G. Amsinck & Co	7,000	
Dumarest Bros. & Co	4,500	
George A. Alden & Co	3,000	
Pottberg Ebeling Co	3,000	
H. W. Peabody Co	3,000	
Wessels, Kulenkampff & Co	2,500	
Roldau & Van Sickle	1,500	
J. J. Julia & Co	1,500	
J. Sambrada & Co	1,000	27,000
JANUARY 29.—By the *Prinz Sigismund*=Colon:		
G. Amsinck & Co	9,000	
Isaac Brandon & Bros	2,500	
Heilbron Wolff & Co	2,000	
Roldau & Van Sickle	1,500	
Mecke & Co	1,000	16,000
JANUARY 30.—By the *Trent*=Colombia:		
J. Sambrada & Co	10,000	
A. M. Capen's Sons	7,000	
W. R. Grace & Co	5,500	
Mecke & Co	5,000	
G. Amsinck & Co	4,500	32,000
JANUARY 31.—By the *Guantanamo*=Tampico:		
Continental-Mexican Rubber Co.	*155,000	
Arnold & Zeiss	*35,000	
Charles T. Wilson	*15,000	
For Europe	*110,000	*315,000
FEBRUARY 3.—By the *Carmania*=Liverpool:		
Adolph Hirsch & Co		11,000
FEBRUARY 3.—By the *Panama*=Colon:		
G. Amsinck & Co	24,000	
J. Sambrada & Co	11,500	
Jose C. Munoz	4,000	
American Trading Co	3,000	
Mecke & Co	2,500	
Louis T. Herrara	1,500	
United Fruit Co	1,500	
Wessels, Kulenkampff & Co	1,000	49,000
FEBRUARY 3.—By the *Esperanza*=Frontera:		
Harburger & Stack	7,000	
Meyer & Brown	4,500	
E. Steiger & Co	3,000	
Graham, Hinkley & Co	2,000	
New York Commercial Co	1,500	
Herman Kluge	1,500	
For Europe	5,000	24,500
FEBRUARY 4.—By the *Rochambeau*=Havre:		
In transit		34,000
FEBRUARY 4.—By the *Mandaville*=Honduras:		
A. Rosenthal & Sons	2,500	
A. Helde	2,500	
Manhattan Rubber Mfg. Co	1,000	
W. L. Wadleigh	1,000	
For Europe	11,000	18,000
FEBRUARY 5.—By the *Prinz Joachim*=Colon:		
J. Sambrada & Co	4,500	
Isaac Brandon & Bros	2,500	
G. Amsinck & Co	2,000	
R. Del Castillo & Co	1,000	10,000
FEBRUARY 7.—By the *Almirante*=Colombia:		
R. Del Castillo & Co	3,500	
Schulz & Ruckgaber	3,500	
G. Amsinck & Co	1,000	
A. Helde	1,000	9,000
FEBRUARY 8.—By the *Portuguesa*=Bahia:		
Adolph Hirsch & Co		30,000
FEBRUARY 8.—By the *Momus*=New Orleans:		
Manhattan Rubber Mfg. Co	9,000	
Various Others	11,000	20,000
FEBRUARY 8.—By the *Santiago*=Tampico:		
Continental-Mexican Rubber Co.	*60,000	
New York Commercial Co.	*34,000	
Arnold & Zeiss	*22,500	
For Antwerp	*34,000	*150,500
FEBRUARY 10.—By the *Alliance*=Colon:		
G. Amsinck & Co	5,000	
Piza, Nephews Co	4,000	
Wessels, Kulenkampff & Co	3,000	
Gillespie Bros. & Co	2,000	
J. J. Julia & Co	1,000	
Mecke & Co	1,000	
H. Marquardt & Co	1,000	17,000

FEBRUARY 11.—By the *Albingia*=Colombia:

Maitland, Coppell & Co.	7,000	
Kunhardt & Co.	1,500	
G. Amsinck & Co.	1,000	9,500

FEBRUARY 11.—By the *Ceguranca*=Tampico:

Continental-Mexican Rubber Co.	*90,000	
For Hamburg	*34,000	*124,000

FEBRUARY 15.—By the *Monterey*=Vera Cruz:

Charles T. Wilson	7,000	
W. Loaiza & Co.	3,500	
Harburger & Stack	3,000	
Herman Kluge	2,500	
Laguna Import Co.	2,500	
George A. Alden & Co.	1,000	19,500

FEBRUARY 15.—By the *Colon*=Colon:

G. Amsinck & Co.	3,500	
Isaac Brandon & Bros.	2,500	
Pablo Calvet & Co.	2,000	
H. Marquardt & Co.	2,000	10,000

FEBRUARY 17.—By the *Cevic*=Liverpool:

Henderson & Korn		4,500

FEBRUARY 17.—By the *Altai*=Colombia:

Maitland, Coppell & Co.	3,500	
De Lima Cortissoz & Co.	2,500	
Caballero & Blanco	1,500	
G. Amsinck & Co.	1,000	8,500

FEBRUARY 17.—By the *Frutera*=Honduras:

A. Rosenthal & Sons	4,500	
Manhattan Rubber Co.	3,500	
G. Amsinck & Co.	2,500	10,500

FEBRUARY 19.—By the *Prinz August Wilhelm*=Colon:

Pottberg Ebeling Co.	12,000	
G. Amsinck & Co.	7,000	
Heilbron Wolff & Co.	2,000	
Andean Trading Co.	1,500	
A. Rosenthal & Sons.	1,500	
Roldau & Van Sickle	1,000	
Gillespie Bros. & Co.	1,000	26,000

AFRICAN.

	POUNDS	
JANUARY 27.—By the *Lapland*=Antwerp:		
Meyer & Brown		11,500
JANUARY 27.—By the *Pennsylvania*=Hamburg:		
Ed. Maurer	85,000	
George A. Alden & Co.	45,000	
Arnold & Zeiss	34,000	
Wallace L. Gough Co.	25,000	
Robert Badenhop	13,500	
Meyer & Brown	11,000	
Rubber Trading Co.	3,500	217,000
JANUARY 27.—By the *Cymric*=Liverpool:		
Henderson & Korn	34,000	
General Rubber Co.	5,000	
Rubber Trading Co.	7,000	46,000
JANUARY 28.—By the *St. Laurent*=Havre:		
Meyer & Brown		45,000
JANUARY 28.—By the *Minneapolis*=London:		
Robert Badenhop		11,500
JANUARY 30.—By the *President Lincoln*=Hamburg:		
Ed. Maurer	50,000	
Arnold & Zeiss	22,500	
George A. Alden & Co.	11,000	
Rubber Trading Co.	8,000	
Robert Badenhop	7,000	98,500
FEBRUARY 3.—By the *Carmania*=Liverpool:		
George A. Alden & Co.	13,500	
James T. Johnstone	13,500	
Wallace L. Gough Co.	3,500	
Meyer & Brown	2,500	33,000
FEBRUARY 3.—By the *Amerika*=Hamburg:		
Ed. Maurer	56,000	
Raw Products Co.	11,500	
Robert Badenhop	5,500	73,000
FEBRUARY 4.—By the *Rochambeau*=Havre:		
Ed. Maurer	56,000	
Meyer & Brown	34,000	90,000
FEBRUARY 4.—By the *Minnehaha*=London:		
Rubber Trading Co.	14,000	
Charles T. Wilson	7,000	18,000
FEBRUARY 5.—By the *Kroonland*=Antwerp:		
Meyer & Brown	45,000	
Rubber Trading Co.	7,000	
Wallace L. Gough Co.	4,500	56,500
FEBRUARY 13.—By the *Minnewaska*=London:		
Arnold & Zeiss	20,000	
Meyer & Brown	7,000	
L. Blitz	2,500	29,500
FEBRUARY 14.—By the *Zeeland*=Antwerp:		
Arnold & Zeiss	34,000	
Wallace L. Gough Co.	30,000	
J. H. Rossbach & Bros.	11,500	
Meyer & Brown	11,000	
Rubber Trading Co.	9,000	
Robert Badenhop	7,000	
Robinson & Co.	7,000	
William H. Stiles	4,500	
N. Y. Commercial Co.	4,500	118,500
FEBRUARY 14.—By the *Philadelphia*=London:		
Charles T. Wilson		13,500
FEBRUARY 17.—By the *Kaiserin Auguste Victoria*=Hamburg:		
Wallace L. Gough Co.	11,500	
Meyer & Brown	9,000	
Robert Badenhop	4,500	25,000
FEBRUARY 17.—By the *Cevic*=Liverpool:		
General Rubber Co.	13,500	
Meyer & Brown	7,000	
James T. Johnstone	3,500	
George A. Alden & Co.	4,500	28,500
FEBRUARY 17.—By the *Patricia*=Hamburg:		
Ed. Maurer	55,000	
Meyer & Brown	15,000	
Arnold & Zeiss	40,000	
George A. Alden & Co.	25,000	
Wallace L. Gough Co.	15,000	
Rubber Trading Co.	13,500	
Charles T. Wilson	3,500	
Robert Badenhop	5,500	172,500
FEBRUARY 17.—By the *Campania*=Liverpool:		
Arnold & Zeiss	9,000	
Ed. Maurer	5,500	14,500
FEBRUARY 20.—By the *Finland*=Antwerp:		
Arnold & Zeiss	56,000	
Rubber Trading Co.	7,000	63,000

EAST INDIAN.

[*Denotes Plantation Rubber.]

	POUNDS.	
JANUARY 24.—By the *Vaderland*=Antwerp:		
Meyer & Brown	*80,000	
JANUARY 25.—By the *Majestic*=London:		
New York Commercial Co.	*50,000	
Robinson & Co.	*22,500	
Ed. Maurer	*13,500	
Charles T. Wilson	*10,000	
Meyer & Brown	*4,500	
Robert Badenhop	*3,500	
In transit	*45,000	*149,000
JANUARY 27.—By the *Mesaba*=London:		
General Rubber Co.	*175,000	
New York Commercial Co.	*50,000	
James T. Johnstone	*45,000	
Ed. Maurer	*35,000	
Meyer & Brown	*15,000	
Wallace L. Gough Co.	*15,500	
Henderson & Korn	*11,000	
Raw Products Co.	*11,500	
Rubber Trading Co.	*11,000	
General Rubber Co.	11,500	
Rubber Trading Co.	9,000	
H. W. Balk	*9,000	398,500
JANUARY 27.—By the *City of Colombo*:		
Meyer & Brown	*125,000	
New York Commercial Co.	*85,000	
Ed. Maurer	*11,000	
L. Littlejohn & Co.	*7,000	*228,000
JANUARY 27.—By the *Lapland*=Antwerp:		
Meyer & Brown		*50,000
JANUARY 27.—By the *Pennsylvania*=Hamburg:		
Meyer & Brown	*9,000	
Rubber Trading Co.	*3,500	*12,500
JANUARY 28.—By the *Minneapolis*=London:		
New York Commercial Co.	*125,000	
James T. Johnstone	*70,000	
Ed. Maurer	*45,000	
Meyer & Brown	*15,000	
Arnold & Zeiss	*13,500	
William H. Stiles	*9,000	
Charles T. Wilson	*9,000	
A. W. Brunn	*7,000	
Rubber Trading Co.	*5,000	
Raw Products Co.	*4,500	*303,000
JANUARY 29.—By the *Ryndam*=Rotterdam:		
Raw Products Co.	*11,000	
Rubber Trading Co.	*5,500	*16,500
JANUARY 30.—By the *New York*=London:		
Arnold & Zeiss	*135,000	
Henderson & Korn	*22,500	
Ed. Maurer	*22,500	
Meyer & Brown	*22,500	
New York Commercial Co.	*7,000	
William H. Stiles	*7,000	
Charles T. Wilson	*4,500	
Robert Badenhop	*4,500	*225,500
JANUARY 30.—By the *President Lincoln*=Hamburg:		
Meyer & Brown		*8,000
FEBRUARY 3.—By the *Pagenturm*=Colombo:		
Meyer & Brown	*125,000	
New York Commercial Co.	*95,000	
Ed. Maurer	*15,000	
William H. Stiles	*8,000	
L. Littlejohn & Co.	*22,500	*265,500
FEBRUARY 4.—By the *Minnehaha*=London:		
General Rubber Co.	*155,000	
James T. Johnstone	*60,000	
New York Commercial Co.	*55,000	
Ed. Maurer	*34,000	
Henderson & Korn	*25,000	
Meyer & Brown	*22,500	
Robert Badenhop	*8,000	
Wallace L. Gough Co.	*7,000	
Arnold & Zeiss	*5,500	
George A. Alden & Co.	11,500	383,500
FEBRUARY 5.—By the *Kroonland*=Antwerp:		
Meyer & Brown		*100,000
FEBRUARY 6.—By the *Potsdam*=Rotterdam:		
Rubber Trading Co.		*13,500
FEBRUARY 7.—By the *Oceanic*=London:		
Ed. Maurer	*20,000	
Meyer & Brown	*11,500	
L. Littlejohn & Co.	*22,500	
Henderson & Korn	*20,000	
Charles T. Wilson	*7,000	*81,000
FEBRUARY 8.—By the *London Hall*=Singapore:		
Ed. Maurer	*89,000	
L. Littlejohn & Co.	*34,000	
James T. Johnstone	*22,500	
Wallace L. Gough Co.	*13,500	
New York Commercial Co.	*4,500	
Ed. Maurer	13,500	
L. Littlejohn & Co.	11,000	188,000
FEBRUARY 10.—By the *Indrakuala*=Singapore:		
Ed. Maurer	*45,000	
L. Littlejohn & Co.	*35,000	
Wallace L. Gough Co.	*23,000	
New York Commercial Co.	*11,500	
L. Littlejohn & Co.	25,000	139,500
FEBRUARY 13.—By the *Axenfels*=Colombo:		
Meyer & Brown	*80,000	
New York Commercial Co.	*65,000	*145,000
FEBRUARY 13.—By the *Minnewaska*=London:		
General Rubber Co.	*175,000	
Meyer & Brown	*50,000	
N. Y. Commercial Co.	*22,500	
James T. Johnstone	*25,000	
Ed. Maurer	*22,500	
Robinson & Co.	*20,000	
L. Littlejohn & Co.	*34,000	
Henderson & Korn	*25,000	
Charles T. Wilson	*13,500	
Robert Badenhop	*8,000	
Raw Products Co.	*6,500	
General Rubber Co.	22,500	
Robinson & Co.	11,000	435,500
FEBRUARY 14.—By the *Philadelphia*=London:		
Arnold & Zeiss	*70,000	
New York Commercial Co.	*56,000	
Henderson & Korn	*22,500	
Ed. Maurer	*13,500	
William H. Stiles	*11,000	
In transit	*67,000	*240,000
FEBRUARY 14.—By the *Zeeland*=Antwerp:		
Arnold & Zeiss	*34,000	
Meyer & Brown	*150,000	
Rubber Trading Co.	*9,000	
William H. Stiles	*5,000	*198,000
FEBRUARY 17.—By the *Patricia*=Hamburg:		
Meyer & Brown	*9,000	
Wallace L. Gough Co.	*5,000	*14,000
FEBRUARY 18.—By the *Minnetonka*=London:		
New York Commercial Co.	*150,000	
Ed. Maurer	*80,000	
Meyer & Brown	*45,000	
James T. Johnstone	*34,000	
H. W. Balk	*34,000	
Henderson & Korn	*22,500	
Rubber Trading Co.	*20,000	
Charles T. Wilson	*11,000	
Raw Products Co.	*15,000	
Robert Badenhop	*7,000	
A. W. Brunn	*4,500	*423,000
FEBRUARY 19.—By the *Erroll*=Singapore:		
Ed Maurer	*35,000	
L. Littlejohn & Co.	*20,000	
Wallace L. Gough Co.	*15,000	
Raw Products Co.	*11,500	
Malaysian Rubber Co.	*11,000	
N. Y. Commercial Co.	*7,000	
William H. Stiles	*7,000	
Wallace L. Gough Co.	11,000	117,500
FEBRUARY 20.—By the *Finland*=Antwerp:		
Meyer & Brown		*65,000
FEBRUARY 21.—By the *Majestic*=London:		
Robinson & Co.	*11,500	
Henderson & Korn	*11,500	
Charles T. Wilson	*11,000	
Ed. Maurer	*11,500	
Robert Badenhop	*4,500	*50,000

GUTTA-JELUTONG.

	Pounds.	
FEBRUARY 8.—By the *Landon Hall*=Singapore:		
L. Littlejohn & Co.	300,000	
Wallace L. Gough Co.	200,000	
Haebler & Co.	150,000	650,000
FEBRUARY 10.—By the *Indrakuala*=Singapore:		
L. Littlejohn & Co.	350,000	
Haebler & Co.	175,000	
Wallace L. Gough Co.	55,000	580,000
FEBRUARY 20.—By the *Erroll*=Singapore:		
Haebler & Co.	350,000	
L. Littlejohn & Co.	300,000	650,000

GUTTA-PERCHA.

	Pounds.	
JANUARY 27.—By the *Pennsylvania*=Hamburg:		
Robert Soltau & Co.		9,000
FEBRUARY 10.—By the *Indrakuala*=Singapore:		
L. Littlejohn & Co.		22,500
FEBRUARY 17.—By the *Patricia*=Hamburg:		
Robert Soltau & Co.		7,000

BALATA.

	Pounds.	
JANUARY 25.—By the *Suriname*=Demerara:		
Ed. Maurer	29,000	
Yglesias, Lobo & Co.	11,500	
S. Banaman Co.	11,000	
George A. Alden & Co.	9,000	
J. P. Watson	7,000	67,500
JANUARY 27.—By the *Grenada*=Trinidad:		
Yglesias, Lobo & Co.	22,500	
American Trading Co.	15,000	
Ed. Maurer	11,500	49,000
FEBRUARY 10.—By the *Mayaro*=Trinidad:		
Yglesias, Lobo & Co.	11,500	
American Trading Co.	4,500	
G. Amsinck & Co.	3,500	19,500
FEBRUARY 13.—By the *Coppename*=Demerara:		
G. Amsinck & Co.	33,500	
Yglesias, Lobo & Co.	5,500	
Ed. Maurer	2,000	
A. S. Lascellas Co.	2,000	43,000
FEBRUARY 15.—By the *Colon*=Colon:		
M. A. De Leon	17,000	
Wessels, Kulenkampff & Co.	2,500	19,500
FEBRUARY 21.—By the *Maracas*=Trinidad:		
G. Amsinck & Co.	11,000	
American Trading Co.	7,000	
Yglesias, Lobo & Co.	7,000	25,000

BOSTON ARRIVALS.

	Pounds.	
JANUARY 10.—By the *Bohemian*=Liverpool:		
Arnold & Zeiss (Africans)		56,000
JANUARY 14.—By the *Cambrian*=London:		
Wallace L. Gough Co. (Africans)		13,500
JANUARY 16.—By the *Ivernia*=Liverpool:		
Arnold & Zeiss (Africans)		11,200
JANUARY 18.—By the *Burmese Prince*=Singapore:		
State Rubber Co. (Ceylon)	101,000	
L. Littlejohn & Co. (Jelutong)	860,000	
George A. Alden & Co. (Jelutong)	150,000	
State Rubber Co. (Jelutong)	115,000	1,226,000
JANUARY 20.—By the *City of Baroda*=Singapore:		
L. Littlejohn & Co. (Gutta Percha)	33,500	
Arnold & Zeiss (Gutta Percha)	4,500	
L. Littlejohn & Co. (Jelutong)	230,000	
Wallace L. Gough Co. (Jelutong)	200,000	
State Rubber Co. (Jelutong)	55,000	523,000
JANUARY 28.—By the *Canadian*=Liverpool:		
Arnold & Zeiss (Africans)		22,500

CUSTOM HOUSE STATISTICS.

PORT OF NEW YORK—JANUARY, 1913.

Imports:	Pounds.	Value.
India-rubber	12,199,390	$9,462,887
Balata	213,352	115,551
Guayule	501,729	235,124
Gutta-percha	8,835	6,127
Gutta-jelutong (Pontianak)	4,554,895	216,115
Total	17,478,201	$10,035,804
Exports:		
India-rubber	17,611	$13,952
Balata	7,028	5,061
Guayule	6,746	5,532
Gutta-percha	22,097	2,200
Reclaimed rubber	18,871	3,773
Gutta-jelutong (Pontianak)	.....	.....
Rubber scrap, imported	1,827,201	$161,011
Rubber scrap, exported	313,233	45,117

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR JANUARY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Ohliger & Co.	124,019	15,015	95,292	21,405	255,731	290,682	45,048	14,036	185,667	535,433	791,164
Adelbert H. Alden, Ltd.	114,651	33,785	47,897	62,755	259,088	.....	.....	.....	.....	.....	259,088
General Rubber Co. of Brazil	99,411	12,009	47,415	1,516	160,351	47,090	36,581	11,701	79,041	174,413	334,764
Ahlers & Co.	93,183	16,246	19,138	24,718	153,285	89,082	11,472	26,238	101,745	228,537	381,822
De Lagotellerie & Co.	10,560	.....	.....	.....	10,560	129,250	26,300	38,495	18,684	212,729	223,289
Mesquita & Co.	.....	.....	.....	.....	.....	1,514	289	1,181	2,046	5,030	5,030
W. Peters & Co.	26,083	44	5,976	50,501	82,604	1,920	160	2,960	150	5,190	87,794
Sundries	11	.....	27	5,245	5,283	8,435	640	3,591	470	13,136	18,419
	467,918	77,099	215,745	166,140	926,902	567,973	120,490	98,202	387,803	1,174,468	2,101,370
Iquitos direct	4,900	27	1,504	735	7,166	90,336	5,518	38,891	94,033	228,778	235,944
Total, January, 1913	472,818	77,126	217,249	166,875	934,068	658,309	126,008	137,093	481,836	1,403,246	2,337,314

EXPORTS OF INDIA-RUBBER FROM PARA, MANAOS AND IQUITOS FOR JANUARY, 1913 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Berringer & Co.	136,819	24,570	238,966	49,975	450,330	314,459	30,102	26,358	160,203	531,122	981,452
Ad. H. Alden, Ltd.	107,271	17,989	66,003	11,297	202,560	70,766	7,223	22,201	20,823	121,013	323,573
General Rubber Co. of Brazil	28,793	5,113	33,193	20,027	87,126	75,063	17,092	7,881	10,495	110,531	197,657
J. Marques	93,363	17,632	117,851	38,269	267,115	44,561	1,428	971	15,635	62,595	329,710
R. O. Ahlers & Co.	5,149	.....	6,879	26,121	38,149	20,860	296	2,783	2,210	26,149	64,298
Suarez Hermanos & Co., Ltd.	.....	.....	.....	.....	.....	77,268	6,598	10,383	39,762	134,011	134,011
De Lagotellerie & Co.	20,740	1,970	17,820	.....	40,530	.....	.....	.....	.....	.....	40,530
Pires Teixeira & Co.	14,960	2,890	22,110	280	40,240	18,190	510	1,320	.....	20,020	60,260
Sundry exporters	11,050	510	27,120	2,800	41,480	.....	.....	4,200	3,360	7,560	49,040
From Itacoatiara direct	.....	.....	.....	.....	.....	16,330	1,650	9,840	9,900	37,720	37,720
	418,145	70,674	529,942	148,769	1,167,530	637,497	64,899	85,937	262,388	1,050,721	2,218,251
From Manáos direct	467,918	77,099	215,745	166,140	926,902	567,973	120,490	98,202	387,803	1,174,468	2,101,370
From Iquitos direct	4,900	27	1,504	735	7,166	90,336	5,518	38,891	94,033	228,778	235,944
Total, January, 1913	890,963	147,800	747,191	315,644	2,101,598	1,295,806	190,907	223,030	744,224	2,453,967	4,555,565

EXPORTS OF INDIA-RUBBER FROM MANAOS FOR OCTOBER, 1912 (IN KILOGRAMS).

	NEW YORK.					EUROPE.					
EXPORTERS.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	Fine.	Medium.	Coarse.	Caucho.	TOTAL.	GRAND TOTAL.
Zarges, Ohliger & Co.	2,081,987	332,932	654,507	414,891	3,484,317	2,325,094	268,995	215,715	736,720	3,746,524	7,230,841
Adelbert H. Alden, Ltd.	1,347,568	428,422	425,772	405,243	2,607,005	464,075	145,647	150,908	272,210	1,032,840	3,639,845
General Rubber Co. of Brazil	1,102,142	270,304	391,964	156,109	1,920,519	492,411	120,307	86,454	459,098	1,158,270	3,078,789
Ahlers & Co.	507,631	95,907	154,425	103,545	861,508	797,664	100,746	243,230	252,873	1,394,513	2,256,021
De Lagotellerie & Co.	5,600	640	900	150	7,290	447,032	89,464	130,511	96,903	763,910	771,200
W. Peters & Co.	3,040	300	.....	52,229	55,569	8,695	2,799	27,858	12,676	52,028	107,597
J. G. Araujo	.....	.....	7,200	7,200	14,400	4,157	3,782	74,049	274	82,262	96,662
Semper & Co.	.....	.....	.....	.....	.....	44,179	4,303	9,969	130	58,581	58,581
Sundries	46,324	.....	.....	3,471	49,795	35,479	5,356	27,854	14,402	83,091	132,886
	5,094,292	1,128,505	1,634,768	1,142,838	9,000,403	4,618,786	741,399	966,548	2,045,286	8,372,019	17,372,422
Iquitos direct	61,435	1,103	14,407	62,333	139,278	1,079,763	92,684	348,241	1,154,688	2,675,376	2,814,654
Total, kilos	5,155,727	1,129,608	1,649,175	1,205,171	9,139,681	5,698,549	834,083	1,314,789	3,199,974	11,047,395	20,187,076

SUMMARY OF DIRECT EXPORTS FROM MANAOS AND IQUITOS.

Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.
1881	307	1889	3,255	1897	7,523	1905	17,352
1882	430	1890	3,693	1898	7,173	1906	16,840
1883	635	1891	3,991	1899	7,853	1907	19,924
1884	1,013	1892	3,812	1900	8,937	1908	20,540
1885	1,462	1893	4,745	1901	16,826	1909	19,412
1886	1,574	1894	3,953	1902	15,162	1910	19,548
1887	1,688	1895	5,433	1903	18,277	1911	18,689
1888	2,141	1896	6,827	1904	17,415	1912	20,188

INDIA RUBBER WORLD

Vol. 47. MARCH 1, 1913. No. 5.

TABLE OF CONTENTS.

EDITORIAL:

Dr. Huber on the Rubber Outlook in Brazil 283
The Latest Report from Putumayo 283
A Memorial to Charles Goodyear 285
Those European Mud-Guards 285
The Rio Exposition Postponed Until September 286
Rubber Tips to Save the Eyes 286
Comparative Imports and Prices of Rubber 286

The Present and Future of the Native Hevea Rubber Industry ..... *By Jacques Huber, Ph.D.* 287

English Views on Rubber Situation 290
As to Direct Shipments from the East 290
Laboratory Organization in the Rubber Industry ..... *By Frederic Dannerth, Ph.D.* 291

Some Observations on the Testing of Steam and Air-Brake Hose Used on Railway Locomotives and Cars ..... *By G. C. Bishop* 295

Private Enterprise in the Belgian Congo 298
Uniformity in Plantation Rubber 298
Imitation Horn and Whalebone 299
"Felrubite" and "Mascolite" ..... *Illustrated* 300

The Rubber Trade in Akron ..... *Our Correspondent* 301

The Rubber Trade in Boston ..... *Our Correspondent* 302

The Rubber Trade in Chicago ..... *Our Correspondent* 304

The Rubber Trade in Cincinnati ..... *Our Correspondent* 304

The Rubber Trade in Rhode Island ..... *Our Correspondent* 305

The Rubber Trade in Trenton ..... *Our Correspondent* 307

The Rubber Trade in San Francisco ..... *Our Correspondent* 308

News of the American Rubber Trade 309
A Very Pleasant Compliment from the Pan-American Bulletin 315
Mid-Western Floods and the Rubber Boot Trade 315
Official India-Rubber Statistics for the United States 316
Obituary Record 319
New Trade Publications 320
Editor's Book Table 321
New Rubber Goods on the Market 322
India-Rubber Trade in Great Britain 324
Some Rubber Interests in Europe 325
Analysis and Tests of Rubberized Fabrics 326
Rubber at the Paris Automobile Salon ..... *By a Special Correspondent* 327

The Japanese Rubber Industry During 1912 ..... *By Our Regular Correspondent* 328

The Balata Industry of Surinam, Dutch Guiana ..... *By a Resident Correspondent* 329

Notes from British Guiana ..... *By Our Regular Correspondent* 329

Some Rubber Planting Notes 331
Recent Patents Relating to Rubber 332
Report of the Crude Rubber Market 334

Rubber Scrap Prices.

LATE NEW YORK QUOTATIONS.—Prices paid by consumers for carload lots, per pound—are practically unchanged.

	Feb. 28, '13.
Old rubber boots and shoes—domestic	10⅛@10¼
Old rubber boots and shoes—foreign	9½@ 9⅝
Pneumatic bicycle tires	6¼@ 6⅜
Automobile tires	10¼@10⅜
Solid rubber wagon and carriage tires	9¼@ 9½
White trimmed rubber	11 @11⅛
Heavy black rubber	4⅜@ 5
Air brake hose	6 @ 6½
Garden hose	1⅜@ 1½
Fire and large hose	2 @ 2⅛
Matting	⅝@ ¾

Antwerp.

RUBBER STATISTICS FOR JANUARY.

DETAILS.	1913.	1912.	1911.	1910.	1909.
Stocks, Dec. 1.....*kilos*	511,060	674,738	588,212	541,512	595,735
Arrivals in January—					
Congo sorts	321,607	226,248	403,421	202,547	186,189
Other sorts	12,645	6,195	82,214	5,656	66,159
Plantation sorts	138,305	88,990	64,321	53,664	31,607
Aggregating	983,617	996,171	1,138,168	803,379	879,690
Sales in January.....	519,865	410,115	492,749	321,217	281,913
Stocks, January 31.....	463,752	586,056	645,419	482,162	597,777
Arrivals since Jan. 1—					
Congo sorts	321,607	226,248	403,421	202,547	186,189
Other sorts	12,645	6,195	82,214	5,656	66,159
Plantation sorts	138,305	88,990	64,321	53,664	31,607
Aggregating	472,557	321,433	549,956	261,867	283,955
Sales since January 1..	519,865	410,115	492,749	321,217	281,913

RUBBER ARRIVALS FROM THE CONGO.

January 28, 1913.—By the steamer *Elizabethville:*

Bunge & Co.....	(Société Générale Africaine) *kilos*	12,000	
do	(Comptoir Commercial Congolais)	14,600	
do	(Forminière)	1,460	
Societe Coloniale Anversoise.....	(Haut Congo)	21,500	
do	(Cie. du Kasai)	64,400	
do	(Comminiere)	470	
L. & W. Van de Velde.....	(Comfina)	20,800	
do	(Velde)	490	
do	(Uelé)	4,100	
do		4,150	
Willaert Freres		1,500	
Divers		5,000	150,470

Plantation Rubber From the Far East.

EXPORTS OF CEYLON GROWN RUBBER.

[From January 1 to December 31, 1912, and for ten years. Compiled by the Ceylon Chamber of Commerce.]

	1911.	1912.
To Great Britain.....*pounds*	3,956,812	8,176,523
To United States.....	2,045,499	4,833,085
To Belgium	896,613	1,315,298
To Australia	68,727	250,326
To Germany	67,315	210,021
To Austria	10,975	85,782
To Japan	57,513	81,456
To Canada	25,445	22,078
To France	117	11,568
To Italy	9,302	7,744
To Russia	.....	4,173
To Holland	12,893	2,282
To India	196	700
To Norway and Sweden.....	.....	39
To Straits Settlements	3,216	.....
To Africa	35	.....
Total	7,154,658	15,001,075

TOTALS FOR 10 YEARS.

Total, 1912.....	15,001,075	Total, 1907.....	556,080
Total, 1911.....	7,154,658	Total, 1906.....	327,661
Total, 1910.....	3,586,854	Total, 1905.....	168,547
Total, 1909.....	1,492,580	Total, 1904.....	77,212
Total, 1908.....	912,125	Total, 1903.....	41,798

TOTAL EXPORTS FROM MALAYA.

(From January 1 to dates named. Reported by Barlow & Co., Singapore. These figures include the production of the Federated Malay States, but not of Ceylon.)

To—	Singapore, Dec. 31.	Penang, Nov. 30.	Port Swettenham, Nov. 15.	Total.
Great Britain..*pounds*	10,609,362	8,396,275	14,784,869	33,790,506
Continent	352,345	20,263	2,002,600	2,375,208
Japan	499,885	.....	.....	499,885
Australia	89,139	.....	.....	89,139
Ceylon	2,217	238,293	759,815	1,000,325
United States	3,077,946	933	2,081	3,080,960
Total, 1912.....	14,630,894	8,655,764	17,549,365	40,836,023
Total, 1911.....	6,589,425	4,547,062	10,221,779	21,358,266
Total, 1910.....	3,764,877	2,234,569	7,224,781	13,224,227
Total, 1909.....	2,412,617	1,976,843	2,138,262	6,527,722

Amsterdam.

JOOSTEN & JANSSEN report [February 14]:

Good demand prevailed at today's sale; the whole offering being sold except some lots held above market value. Next sale will be held March 12.

Rotterdam.

HAVELAAR & DE VRIES report [February 8]:

The next sale will take place on February 21 and will include 27 tons Congo, 6 tons *Hevea*, and 6 tons of miscellaneous descriptions.